

Volume 27.

Number 1.

THE INDUSTRIALIST

ISSUED WEEKLY BY

KANSAS STATE
AGRICULTURAL COLLEGE

☆ ☆ ☆

Editor-in-Chief,

Pres. E. R. N.

Local Editor,

Prof. J. D. ...

Alumni and Former Students,

Prof. J. ...

☆ ☆ ☆

Published by
PRINTING DEPARTMENT
J. D. Rickman, Supt.

Historical Society

S.P.
630.7
J
152

KANSAS STATE
HISTORICAL SOCIETY

BOARD OF INSTRUCTION.

ERNEST R. NICHOLS, A. M. (University of Iowa), President.....	512 Houston street
JOHN D. WALTERS, M. S. (Kansas State Agricultural College)	North end of Sixth street
Professor of Industrial Art and Designing.	
ALEXANDER B. BROWN, (Boston Music School), A. M. (Olivet).	817 Houston street
Professor of Music.	
JULIUS T. WILLARD, M. S. (Kansas State Agricultural College).....	1211 Moro street
Professor of Applied Chemistry.	
ALBERT S. HITCHCOCK, M. S. (Iowa Agricultural College) ..	College Hill, 2 miles N. W. of College
Professor of Botany.	
FREDRIC A. METCALF, O. M. Superioris Honoris (Emerson Coll. Oratory) 6th and Poyntz ave.	
Professor of Oratory.	
GEORGE F. WEIDA, Ph. D. (Johns Hopkins).....	517 Fremont street
Professor of Pure Chemistry.	
HENRY M. COTTRELL, M. S. (Kansas State Agricultural College).....	College Campus
Professor of Agriculture, Superintendent of Farm.	
MISS MINNIE AVA NELLIE STONER. (Boston N. S. of H. A.), B. S. (S. D. A. C.) Fourth and Osage	
Professor of Domestic Science, Dean of Women's Department.	
JOSEPH D. HARPER, M. S. (Rose Polytechnic Institute) Houston st., between 6th. and 7th. streets	
Professor of Mechanical Engineering, Superintendent of Shops.	
EDWIN A. POPENOE, A. M. (Washburn).....	Seventh and Osage streets
Professor of Horticulture and Entomology, Superintendent of Orchards and Gardens.	
FRANK C. LOCKWOOD, Ph. D. (Northwestern).....	Corner Fifth and Humboldt
Professor of English.	
BENJ. L. REMICK, Ph. M. (Cornell College).....	Fourth and Osage
Professor of Mathematics.	
BENJ. F. EYER	_____
Professor of Physics and Electrical Engineering.	
C. E. GOODELL, A. M. (Franklin).....	_____
Professor of History and Economics.	
MISS HARRIET HOWELL, (Pratt Institute)	1211 Moro street
Superintendent of Domestic Art.	
JOSHUA D. RICKMAN, I. T. U.	911 Osage street
Superintendent of Printing.	
MISS JOSEPHINE T. BERRY, A. B. (Kansas University)	Sixth street and Poyntz avenue
Librarian.	
B. S. MCFARLAND, A. M. (Miami),.....	Fourth and Osage
Principal Preparatory Department.	
MISS FLORENCE BALL	N. E. Cor. Juliette and Fremont streets
Director of Physical Training.	
MISS LORENA E. CLEMONS, B. S. (K. S. A. C.), Secretary.....	Corner Fourth and Laramie
SEPTIMUS SISSON, S. B. (Chicago), V. S. (Toronto)	Cor. Manhattan avenue and Moro
Associate Professor of Veterinary Science and Biology.	
D. H. OTIS, M. S. (Kansas State Agricultural College).....	College Hill
Assistant Professor of Dairying.	
W. A. MCKEEVER, A. M. (Kansas University).....	_____
Assistant Professor of English and Philosophy.	
MISS JOSEPHINE C. HARPER, Instructor in Mathematics	Corner Sixth and Pierre streets
MISS ALICE RUPP, (Indiana State Normal), Instructor in English	_____
CHARLES EASTMAN, Cadet Major and Acting Commandant	_____
William L. House, Foreman of Carpenter Shop	Corner Sixth and Colorado
Chas. W. Pape, M. S. (K. S. A. C.), Ass't in Zoölogy and Ass't Curator Museum.....	1104 Moro
R. W. Clothier, M. S. (K. S. A. C.), Assistant in Chemistry. Fremont, between Fifth and Sixth	
Margaret J. Minis, Assistant Librarian	Fourth and Moro streets
R. H. Brown, M. T. (Kan. Con. of Music), B. S. (K. S. A. C.), Ass't in Music. 817 Houston street	
J. M. Westgate, M. S. (K. S. A. C.), Assistant in Botany, Cor. Manhattan avenue and Vattier	
May Secrest, B. S. (K. S. A. C.), Assistant in Domestic Art, Cor. Leavenworth and Seventh	
Wm. Anderson, B. S. (K. S. A. C.), Assistant in Mathematics. Cor. Humboldt and Juliette ave	
Gertrude Barnes, Assistant Librarian	Cor. 9th and Moro
Albert Dickens, B. S. (K. S. A. C.), Assistant in Horticulture.....	Corner 8th. and Osage
William Baxter, Foreman of Greenhouses	_____
J. G. Haney, B. S. (K. S. A. C.), Ass't in Feeding and Field Experiments, Manhattan ave and Kearney	
Mary Pritner, B. S. (K. S. A. C.), Assistant in Domestic Science	Cor. 7th and Leavenworth
Theodore Lindquist, M. S. (Northwestern), Ass't Physics.....	Cor. Fifth and Humboldt
W. M. Sawdon, B. S. (Purdue), Assistant in Mechanics.....	Juliette and Houston
O. I. Purdy, B. S. (K. S. A. C.), Assistant in Printing.....	1216 Fremont street
Ada Rice, B. S. (K. S. A. C.), Assistant in Preparatory Department.....	Osage and 8th. street
Louis Wabnitz, Foreman Iron Shops	5th and Osage
Henry Van Leeuwen, Instructor in Cheese Making (U. W. D. S.)	Manhattan and Kearney
E. W. Curtis, Instructor in Butter Making	_____
Florence L. Grant (Mass. Normal Art School), Assistant in Drawing	Fourth and Osage
A. T. Kinsley, B. S. (K. S. A. C.), Assistant Veterinary Department.....	_____
Elizabeth Agnew, B. S. (K. S. A. C.), Assistant in Domestic Science.....	_____
Jacob Lund, M. S. (K. S. A. C.), Engineer.....	Cor. Tenth and Kearney
C. Jeanette Perry, B. S. (K. S. A. C.), Executive Clerk.....	Corner Colorado and Fifth
W. R. Lewis, Janitor	N. E. corner Main College Building
Archie Huycke, Secretary to President	Manhattan avenue and Kearney

THE INDUSTRIALIST.

VOL. 27.

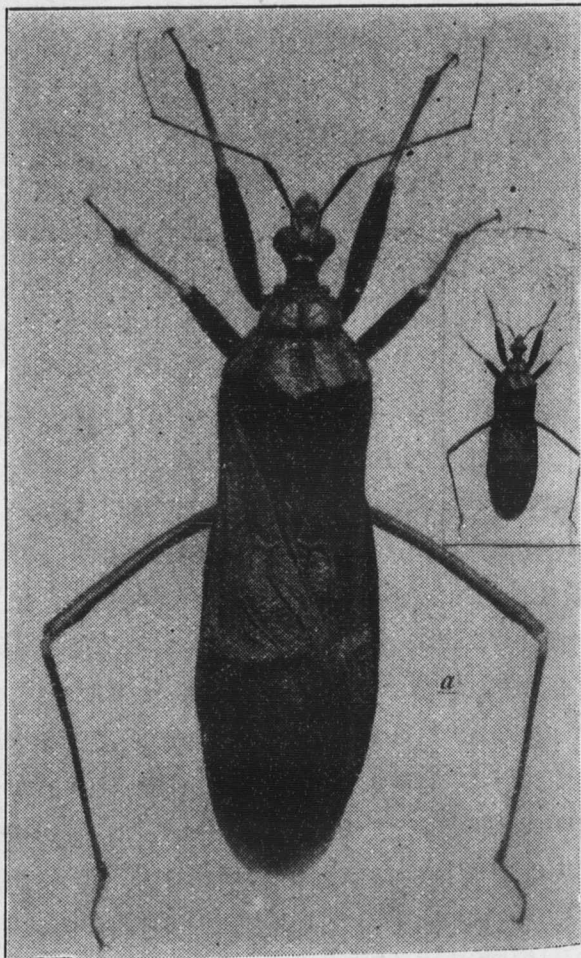
MANHATTAN, KAN., OCTOBER 2, 1900.

No. 1

"THE KISSING-BUG."

THE past year was marked by some very extraordinary demonstrations of the osculatory habit, and apparently either following a bad example or from an unwillingness to be outdone by the remarkable performance of a naval hero certain insects, according to newspaper reports, strove for honors in the same field, and by the aid of the press

succeeded in arousing a popular alarm which was as ridiculous as it was amusing. Even in Kansas considerable interest was manifested in the doings of these insects, and the writer, in at least one instance, distinctly remembers some very sober consultations with an anxious mother concerning the appearance and habits of the strange "kissing-bug." At some of the farmers' institutes the "kissing-bug" stories, allowing for individual modifications, were apparently well in the minds of not a few. In one case the



discussion of some insects of agricultural importance had to be curtailed in order that the "kissing-bug" might be discussed for the benefit of one poor woman, whose desire to know more about the insect could possibly only be exceeded by her hope that she might reach her farm before the fast-approaching storm could spoil her new but remarkable bonnet.

The "kissing-bug" stories originated in Washington, D. C., in June of last year. Several persons during that season were bitten or "stung" in the face by some strange insect, causing such an inflammation as to necessitate their removal to the Emergency Hospital. At this time, two species of predaceous insects, *Melanolestes picipes* and *Opsicoetus personatus*, were present in that city in more than their usual numbers, and were undoubtedly responsible for causing several very painful wounds. With these facts for a foundation, there arose the amusing stories now current in so many minds. The imaginations of some have developed most remarkable looking insects. Either for fun or from a desire to establish a reputation for their entomological knowledge among those less informed than themselves, some have successfully palmed off insects other than the so-called "kissing-bugs," so that one hears of "kissing-bugs" of all sorts of imaginable size, shape, and color. Of a number reported to the writer, two are worthy of mention; one, the large wasp common about windows and porches of houses in summer, and the other, the large electric-light bug.

The name "kissing bug" must not be thought of as being applied to one particular insect, as quite a number have been designated by this name. In the true bugs or Hemiptera Heteroptera there is a family of insects by the name of Reduviidae, which contains more than a hundred kinds or species, popularly known as the assassin-bugs, most of which live on other insects, and sometimes attack higher animals, and even man. A number of these species have been known to inflict wounds upon persons, some of which were upon the face, and in so doing have won from the newspapers the name of "kissing-bugs." Dr. L. O. Howard, in a recent publication from the Division of Entomology, Department of Agriculture, gives the following insects to which the name "kissing-bug" has been applied: The Black Corsair (*Melanolestes picipes*), the Cannibal Bug or Masked Bedbug Hunter (*Opsicoetus personatus*), *Coriscus sub-coleoptratus*, the Two-spotted Corsair (*Rasahus biguttatus*), *Rasahus thoracicus*, and the Blood-Sucking Cone-Nose (*Conorhinus sanguisuga*). Of these, the Black Corsair, Cannibal Bug, and the Cone-Nose are perhaps the most common in this State.

The Black Corsair (*Melanolestes picipes*) is not a rare insect in Kansas. Quite a number of specimens have been collected this spring about the electric lights by students in entomology. It is

quite frequently found beneath stones. The insect is black in color, and in size and shape closely resembles the smaller specimen in fig. a. The species has a wide distribution, having been recorded by Uhler, from California, Texas, Indiana, Indian Territory, and the Atlantic region from Maine to Florida and Louisiana, and Para, Brazil.

Unless carefully handled, this insect will bite in self-defense by means of a beak or proboscis, which projects from the head and is in shape quite similar to the one in fig. b, which has been greatly enlarged. Several students bitten by the insect have said that the pain following the bite was as severe as a sting by a bee. Doctor Howard mentions a case where "a person was bitten at the end of the middle finger, and the first touch of pain was about the same as that from the sting of a bee or hornet, but it soon grew ten times more painful, and a feeling of weakness followed with vomiting. The pain was felt to shoot up the arm to the under jaw, and the sickness lasted for a number of days." The insect does not possess any poison-secreting glands, and the poisonous effects of its wounds must apparently be due to germs from some former food or victim, which are introduced into the wounds upon the insect's proboscis or bill.



Opsicoetus personatus, the Cannibal Bug, or Masked Bed-bug Hunter, as it is more popularly called, is thought by Slingerland to be entitled to the "undisputed cognomen of kissing-bug" in New

York state. Like the above species, it also is attracted to the lights. The illustration shows the insect in its natural size, and greatly enlarged at *a*. The young specimens have the habit of covering themselves with dirt and dust as shown in *n*. The writer has seen quite a number of nymphs believed to be this same species in the bottom of wheat pits in flour mills, living upon the larvæ of the beetles which are so destructive to the wheat. The adults, when carelessly handled, have been known to inflict severe wounds. The effects of the bite seem to depend upon the health of the person. In one case a bite upon the neck was accompanied with considerable swelling, while in others the pain almost equalled the bite of a snake. To those possessing a weak constitution the bite of this insect may prove fatal.

The Blood-Sucking Cone-Nose (*Conorhinus sanguisuga*) is perhaps the most common of the three, and is in form quite similar to the preceding, but is at once distinguished from them by its larger size and its brown color. In some localities it is called the Texas or Mexican Bed-bug. It flies at night and frequently gains entrance into houses through open doors and windows, where it has often bitten the sleeping inmates. Mrs. Bertha Dickens, who has made a very careful study of the life history of the pest, records it as being frequently found in poultry houses, and as attacking horses. The normal habit of the Cone-Nose is to live out of doors and prey upon other insects.

The "Kissing-bug" stories were largely the creation of the newspapers for the purpose of furnishing something novel if not startling to their readers to assist in tiding over a dull season. With a little exaggeration some little unknown insects attained considerable notoriety, all out of proportion to their importance, and a strange habit attributed to them which they do not possess. There are no insects which possess the kissing habits as the published accounts would have led one to believe, but there are a number of insects, the most important of which have been mentioned in this paper, if handled carelessly or under some accidental circumstance, may bite, causing in some instances painful wounds. There are other insects, such as the mosquito or bed-bug, which under certain conditions may cause just as painful wounds, and as far as the kissing habit is concerned are as much entitled to the name of "Kissing-bugs" as those discussed, notwithstanding the fact that the newspapers have not seen fit to give them this name.

P. J. PARROTT.

SUMMER FARMERS' INSTITUTES.

LAST year the Kansas State Agricultural College held twenty-five farmers' institutes during the summer, as an experiment. The results were so satisfactory that the summer institute has been a special feature of our work this season. Between Commencement and September 22 this summer, College speakers have taken part in ninety-seven such institutes, these ninety-seven meetings having had a total attendance of 51,550 people.

With few exceptions, these institutes have been held in connection with picnics. The general plan was to hold the meeting in a grove. A short session was held in the morning, followed by a basket dinner, to which all were invited. At 1:30 the afternoon session began. Usually, on account of the hot weather, the people were too tired at night to hold a night session, but in several places where the weather was favorable a night meeting was held indoors.

The program and method of conducting the summer meeting is the same as for the winter meeting, except that more music is desirable. The topics handled are those pertinent to the season and are treated so that the farmers present can go home and begin to put in practice the next day the methods advocated by the speakers. A question box gives an opportunity to bring up subjects that are of special interest to farmers in the audience that are not on the program. Usually the question box is one of the most valuable and most enjoyed parts of the program. A stand with ice-cream and lemonade is a necessity when the weather is hot, and the profits from this help the local association. Many institutes have good exhibits of farm products, and frequently games and contests follow the program.

The advantages of the summer farmers' institute are many. It should be held at a time when farm work is least pressing and affords a days delightful change after several months of driving work. It brings out the entire community and gives them a good social time in connection with an exchange of experience in regard to current farm operations. A well advertised summer-institute will bring people fifteen to twenty miles. In one held in the extreme western part of the State last week, the writer met a party of six who had driven forty-three miles to attend the meeting.

At this College the institute work is conducted by the regular College staff as an addition to their regular duties, and the summer institute gives the College people an opportunity to carry the results of their work to many thousands of farmers more than could be met in winter when teachers are kept busy with classes.

LeRoy had a unique institute. This place selected July 4 as the date for their meeting, held it in a beautiful grove and had all the usual Fourth of July features except the speeches. A full program was given both forenoon and afternoon and every address a practical one upon some farm topic. Two thousand people attended. In what better way could a Fourth of July celebration be conducted? When practicable these meetings have been held in connection with Grange picnics, old settlers' meetings, and similar organizations.

The summer institute work has been so successful with us that we want to commend it to the farmers of other states. Think of the delightful institute picnics that could be held along the Hudson in New York or among the mountains in Vermont.

SUMMER INSTITUTES HELD, with date, place, College speakers, and attendance.

Date.	Place.	Speakers.	Attendance.
June 28	Altamont	Popenoe	25
" 29	Oswego	Popenoe	50
July 4	Le Roy	Walters	2000
" 13	LaHarpe	Popenoe	50
" 17	Overbrook	Cottrell	5000
" 19	McLouth	Otis	250
" 19	Wabaunsee	Cottrell, Baxter, Clothier, Haney and Westgate	1000
" 20	Jarboło	Otis	400
" 21	Cadmus	Cottrell	5000
" 27	Porterville	Berry and Haney	500
" 27	Westmoreland	Cottrell	1200
Aug. 1	Belleville	Haney	700
" 1	Cedarville	Cottrell, Popenoe and Regent McDowell	500
" 2	Mankato	Cottrell and Haney	300
" 2	Marysville	Walters and Otis	400
" 3	Irving	Walters and Otis	500
" 4	Jennings	Cottrell, Rickman and Haney	300
" 6	Brewster	Cottrell and Westgate	100
" 6	Goddard	Otis and Dickens	350
" 7	Kanarado	Cottrell and Westgate	100
" 7	Zenda	Dickens and Otis	300
" 8	Norwich	Dickens and Otis	300
" 9	Arkansas City	Popenoe and Haney	1200
" 9	Riverdale	Dickens and Otis	450
" 9	Sibley	Cottrell and Walters	1000
" 10	Benton	Dickens and Otis	1500
" 11	Dexter	Haney	200
" 11	Pontiac	Dickens and Otis	100
" 11	McFarland	Cottrell and Walters	150
" 13	Marvin	Cottrell and Rickman	500
" 13	New Murdock	Otis	400
" 14	Cawker City	Cottrell and Rickman	600
" 15	Centerville	Cottrell and McFarland	700
" 15	Fredonia	Popenoe and Haney	200
" 16	Pleasant Hill	Cottrell and McFarland	400
" 17	Michigan Valley	Cottrell and McFarland	1200
" 18	Belleflower Grange	Cottrell and McFarland	350
" 20	Sunflower	Haney and Bainer	30
" 21	Victor	Haney and Bainer	300

THE INDUSTRIALIST.

7

SUMMER INSTITUTES HELD—Concluded.

Date.	Place.	Speakers.	Attendance.
Aug. 21	Leon	Westgate	250
" 21	Wilsey	Cottrell and Rickman	200
" 22	Council Grove	Cottrell and Rickman	200
" 22	Linn	Haney and Bainer	700
" 22	Winchester	Clothier and Otis	500
" 23	Boyle	Clothier and Otis	1000
" 23	Speed	Haney and Bainer	500
" 23	Union Center	Cottrell and Rickman	60
" 24	Denison	Clothier and Otis	800
" 24	Florence	Cottrell and Rickman	700
" 24	Portis	Haney and Bainer	100
" 25	Downs	Haney and Bainer	250
" 27	Homewood	Otis	150
" 28	Centropolis	Otis	450
" 28	Dole's Park	Walters and Dickens	450
" 28	Waldo	Cottrell and Bainer	200
" 29	Princeton	Otis	400
" 29	Denmark	Cottrell and Bainer	100
" 30	Acme	Cottrell, Rickman and Bainer	500
" 30	Melvorn	Dickens	500
Sept. 1	Hutchinson	Popenoe and Otis	250
" 1	Spring Hill	Dickens	850
" 1	Ozawkie	Clothier	125
" 3	Marquette	Haney	500
" 3	Nickerson	Popenoe and Otis	150
" 4	Sterling	Popenoe and Otis	125
" 4	Whiting	Cottrell and Rickman	400
" 5	Geneseo	Popenoe and Otis	75
" 5	Thompsonville	Cottrell	1000
" 5	Fairfield	Walters	600
" 6	White City	Nichols and Haney	500
" 6	Hays City	Cottrell and Walters	2000
" 6	Lyons	Popenoe and Otis	275
" 7	Chase	Popenoe and Otis	30
" 7	Snokomo	Haney and Berry	500
" 8	Silica	Otis	75
" 8	Block	Walters	1300
" 8	Lyndon	Cottrell and Perry	1200
" 8	Herrington	Haney	1200
" 10	Mound Valley	Walters and Dickens	200
" 11	Burdett	Cottrell and Clothier	250
" 11	Rozel	Cottrell and Clothier	75
" 12	Garfield	Cottrell and Clothier	300
" 12	Norwood	Otis and Westgate	100
" 13	Pomona	Otis and Westgate	150
" 13	Windhorst	Cottrell and Clothier	600
" 13	Centralia	Walters	300
" 14	Offerle	Cottrell and Clothier	125
" 17	Kinsley	Dickens and Haney	20
" 18	Macksville	Dickens and Haney	80
" 19	Angola	Westgate and Elling	350
" 20	Little River	Berry and Cottrell	250
" 20	Paxico	Otis and Pritner	200
" 20	St. John	Dickens and Haney	50
" 21	Dwight	Berry and Cottrell	80
" 21	Peace Creek	Dickens and Haney	500
" 21	Sylvia	Dickens and Haney	50
" 22	Pekin	Dickens and Haney	100

Total institutes to September 22, 97. Total attendance, 51,550.

The College force has attended these institutes as follows:

Cottrell	35	Westgate	7
Otis	27	McFarland	4
Haney	24	Berry	4
Dickens	16	Regent McDowell	1
Popenoe	12	Nichols	1
Walters	12	Baxter	1
Clothier	10	Perry	1
Rickman	9	Pritner	1
Bainer	9	Elling	1

H. M. COTTRELL.

THE INDUSTRIALIST.

BOARD OF REGENTS.

Published weekly during College year for \$1 per annum; students and alumni, 50 cents.

KANSAS STATE AGRICULTURAL COLLEGE.

Manhattan, Kansas.

☆ ☆ ☆

PRES. E. R. NICHOLS.....Editor-in-Chief

PROF. J. D. WALTERS.....Local Editor

PROF. J. T. WILLARD.....Alumni Editor

HON. E. T. FAIRCHILD, President.... Ellsworth

HON. J. S. McDOWELL, Vice-President,
Smith Center

HON. W. T. YOE, Treasurer..... Independence

HON. WM. HUNTER, Loan Comm'r, Blue Rapids

HON. MRS. SUSAN J. ST. JOHN..... Olathe

HON. CARL VROOMAN..... Parsons

HON. J. M. SATTERTHWAITE..... Douglass

PRES. E. R. NICHOLS, Sec. *ex-officio*.

LOCAL NOTES.

Professor and Mrs. Metcalf gave one of the popular "Metcalf Recitals" at Garrison, Kan., on Saturday night, September 29.

Professor Lindsland, of the Utah Agricultural College, visited here last week. He is on a tour of inspection of the agricultural colleges of the country.

The next meeting of the Manhattan Horticultural Society will be held on Thursday, October 18, at 2:30 P. M., in the Horticultural building at the College. All are invited.

In addition to the farmers' institute work mentioned elsewhere in this number, Prof. J. D. Walters addressed nine county normal institutes during the summer vacation.

Professors B. S. McFarland and Remick, and Miss Grant have rented rooms at Dr. Little's; Miss Rupp has rooms at Mrs. Kohler's, and Miss Howell at Mrs. Lees', on Pointz Avenue.

The Interstate Telephone Association, which includes the independent phone men from Missouri, Arkansas, Oklahoma, Indian Territory and Kansas, met in semiannual convention in this city last week.

Prof. D. E. Lantz, at one time professor of mathematics at this College, has been elected principal of the schools at Alma, Kan., and his daughter Edith Lynette, '96, has been elected teacher of one of the grades.

Mr. C. J. Peeler, industrial agent for the Missouri, Kansas & Texas Railway, visited the College last week for the purpose of making the acquaintance of the Experiment Station force. He hopes to make this of mutual benefit.

The newly reconstructed laboratory of the Domestic Science Department is being occupied by the short course classes and the class in chemistry of cooking. The new laboratory was built this summer by removing the partition between the two southwest rooms of the main floor of the Domestic Science building.

Professor Stoner received the Board and Faculty last Thursday afternoon from 3:30 to 4:30 o'clock at the Domestic Science Hall. Light refreshments were prepared and served by the postgraduates of the department. The Regents observed the work of the class in therapeutic cooking, and of the short course domestic science class.

Gen. E. G. Harrison, government road expert, spoke at the opera-house on Friday afternoon, September 27. As the date of meeting had been set the previous Tuesday, making thorough advertising impossible, the attendance was small. The address was highly interesting and practical and ought to bear fruit in Manhattan.

Mr. August Ohst, of Alma, the "Rock Island painter," has been busy for several weeks with painting and decorating the class rooms, halls and offices. The rooms as far as he has been able to go, look clean and fresh, and it is to be regretted that we cannot have all of them repainted. Mr Ohst frescoed the chapel last year and all of his work looks tasty and bright.

The next sale of the Manhattan Live Stock and Sales Company will be held at their arena here October 6. There have already been listed 449 head of cattle for the sale and more coming. Doctor Brady has been over the north part of the county advertising and soliciting and Doctor McNemar has been in Pottawatomie. Nothing is being spared to make the next sale better than the first which was very satisfactory.

The temporary chemical laboratory for the students is located in the sanitary cow barn. This will be very difficult to keep comfortable in cold weather, or to ventilate in any kind of weather, but it is the best that can be done now, and we are very glad that we have that much. The class rooms of the department are in the new Agricultural Hall this term. The Experiment Station laboratory is in the southwest corner of the ground floor of the Armory.

A large force of men and teams has been busy during September grading and macadamizing the College roads. New cinder walks have been laid from the Agricultural building to the Main building and the shops, and several new culverts have been built on different parts of the campus. Our private roads and walks have never before been in such fine shape as they are now; but what is the city going to do with their long-talked-of road from our gates to the business quarter and the depots? What is the new rock crusher doing these beautiful fall days?

The new laboratory tables for the Chemical Department received their baptism of sulphuric acid at the hands of the students last week. They are built of cypress throughout, finished in natural wood color, and make a very handsome appearance. Each accommodates two students working side by side, and four are placed together in a block that provides for eight as the old tables did. A lead-lined trough runs lengthwise through this block, into which all the ordinary waste water of the tables go. The gas pipe and water pipe is immediately above this trough. The trough and piping is supported from the floor independently of the tables, which are thus to a certain extent portable. The whole makes a very convenient and handsome installation. It will be transferred to the new chemistry building when we get it.

The Kansas State Agricultural College believes in expansion. The attendance at the close of the first week of the present fall term is about one-half larger than that of any previous year up to 1899, and nearly one-third larger than that of last year. There were enrolled and present in classes on September 25, at the beginning of the second week, 146 preparatory students, 311 first years, 143 second years, 76 third years, 60 fourth years, 3 special students, 24 apprentices, 31 students in the first term of the Domestic Science Short Course, and 15 students in the second term of the Domestic Science Short Course — a total of 809 students. These figures do not include the post graduates, of whom several are present but not definitely assigned. In 1896 the total attendance at the close of the first week was 522, in 1897 it was 555, in 1898 it was 518, and in 1899 it was 639. The total attendance for the collegiate year 1897-98 was 874, *i. e.* only 65 students more than were present at the first week of the present year. Last year the total attendance reached nearly the eleven hundred mark (1094); This year we shall probably "Tip the beam" at fifteen hundred.

Among the many items of growth of the College should be mentioned the erection of a group of dormitory buildings near the campus, by Mr. C. P. Dewey, of Manhattan. There will be four buildings in all, each of them about fifty by one hundred feet and two stories in height. The central building, which is already under roof, will be for young women. It contains a large kitchen, a dining-hall measuring 17x45 feet, a room for the cook, two bath rooms, twelve double rooms for students, ample closets and halls, and roomy basements and attics. The other three buildings, one of which will be completed before the opening of the winter term, will be arranged for young men. Each of them will contain twenty-four double rooms, several water-closets and bath rooms, and ample hall space. The whole group will be heated by steam and lighted by electric light. The rooms will be cosy and well furnished. The College may well congratulate itself over this improvement. One of the chief obstacles to our growth during the past half-dozen years has been in the lack of proper lodging places. By the erection of these buildings Mr. C. P. Dewey earns the thanks of every friend of the College.

Our friends will notice a number of new names on the Faculty roster. Lack of space prevents us from speaking in detail of the rearrangements of the work of instruction and the election of new instructors, but we promise to do this in a future issue. The chair of mathematics has been filled by the election of Prof. B. L. Remick, for the past two years associate professor of mathematics at Bradley Institute, Peoria, Ill. The chair of physics has been given to Mr. B. F. Eyer, formerly teacher of physics and zoölogy in the Topeka high school. Mr. Theodore Lindquist has been reelected assistant of physics. Prof. C. E. Goodell, for the past four years professor of history at Franklin College, Franklin, Ind., has been elected professor of history and economics. Mr. W. A. McKeever, formerly superintendent of schools at Smith

Center, Kan., has been elected assistant professor of English and philosophy. Mrs. W. W. Hutto, of Manhattan, has been elected assistant in music. Miss Elizabeth Agnew, a last-year's graduate of this College, has been made graduate assistant in Domestic Science. The Misses Adlaide Wilder, Marion Jones, Ina Holroyd, Hattie Nichols, Kate Manley, Kate Paddock and Myrtle Mather have been made assistants in primary work.

The booming success of the institute picnic at Fairfield was due in good part to the hard work of "our" Fred Smith, of the *Russell Reformer*. He advertised it for weeks, escorted the College delegation to the grove and presided over the meeting. Yet, while he complimented others, as will be seen from the following clipping, he never said a word about himself and his interesting talk about the necessity of education for the farmer. The *Reformer* says: "Another Fairfield Alliance picnic has passed into history, and like the ten that have gone before, this was a success as picnic day for the farmers of that community. There was a good crowd present, and everybody seemed to have a good time. Prof. J. D. Walters, of the State Agricultural College, was the speaker of the day. He gave a talk on the Agricultural College, its work and its needs, which was followed by a short talk by R. S. Kellog on the necessity of securing an education in these days when brain power has in so large a measure supplanted brute force in the problems of life. Following this talk, Professor Walters delivered a good lecture on "Gumption," which appealed directly to the farmers and their wives, and dealt with the management of the business part of farm life. It was highly appreciated by all who heard it."

ALUMNI AND FORMER STUDENTS.

G. W. Finley, '96, visited College with his wife, Dora Shartel-Finley.

Wm. Anderson, '98, spent the summer vacation studying mathematics and physics at Chicago University.

Harriet Nichols, '98, has returned to take postgraduate work in mathematics. She brings a younger sister with her to attend the city schools.

Miss Grace Secrest, '96, left on Friday last for Akron, Ohio. Miss Secrest has accepted a position as supervisor of sewing in the Akron schools.

W. A. McCullogh, '98, visited the College on his way to Kansas City to resume his medical studies at the University Medical School there. This will be his second year.

J. W. Evans ['94] left yesterday for Chicago where he will resume his studies in the Chicago Homeopathic school. He has spent his vacation with the saw and hammer helping to build up Manhattan and goes now to take his last year in the study of medicine.—*Mercury*.

R. E. Eastman ['00] started yesterday for Cornell University, New York, where he will make a special study of horticulture, botany, and entomology. He graduated here last spring.—*Mercury*.

Dean B. Swingle left for Madison, Wis., Wednesday to take up postgraduate studies in botany at the university. Mr. Swingle completed the course at the Agricultural College last year.—*Nationalist*.

A. L. Peter, '96, made a short visit recently. He received the degree of Doctor of Medicine from the Homeopathic College of Denver last spring. He received two first prizes, had the highest general average, and was appointed resident physician of the homeopathic hospital. He has just been appointed professor of inorganic chemistry in the college there.

Mr. and Mrs. J. S. Crum announce the marriage of their daughter Elizabeth to Mr. J. Frank Crowl, of Rocky Ford, Colo., Tuesday evening, September 18. They will be at home at Rocky Ford, Colo., after October 1.—*Nationalist*.

These young people will be remembered as old students. The best wishes of their friends are extended the young couple. Mr. Crowl is in the employ of the American Beet Sugar Company.

Mrs. A. F. Huse, of Arkansas City, daughter of Mr. and Mrs. Wm. Knostman, of this city, has an article entitled "Clubs and Club Women" in *Phun and Phax*, a magazine published at Winfield, Kan. Mrs. Huse is a very enthusiastic club woman, and when visiting in our city is a welcome guest of our ladies' clubs.—*Nationalist*.

Mrs. Huse is known in College history as Emma Knostman, class of 1880.

The opportunities of the institution and the natural tendencies of youth which some years since led a flippant newspaper man to refer to "the greatest agricultural college in the world" as "Fairchild's matrimonial agency," have remained much the same since his departure. The past summer has witnessed the beginning of the fulfillment of the hymeneal hopes of a number of our graduates; too many to permit individual mention of each. The following list includes all the marriages that have come to the knowledge of the editor since the last notice. For one or two of these we are indebted to the *Herald*: June 19, C. C. Smith, '94, and Florence Beverly, second year in 1890. June 20, F. P. Strong and Jennie R. Smith, '94. June 20, C. A. Johnson, '95, and Myrtle Hood, '97. June 20, L. B. Dutton and Clare Wilson, '97. June 28, Scott N. Higinbotham and Anna V. Hanson, '98. July 3, John Pierce, '98, and Nora Reed, '97. July 10, C. W. Pape, '95, and Ida Glaettli. July 11, G. S. Sargent and Nellie Burtner, '00. July 18, Homer Derr, '00, and Elizabeth Asbury, '00. August 8, Harry Darnell, '92, and Maude Kennett, '95. September 5, H. M. Bainer, '00, and Clara Nitcher, third year in 1900. September 6, Geo. C. Peck, '84, and Jennie Rocky. September 12, T. W. Allison, '98, and Inez Manchester, '98. September 27, J. A. Conover, '98, and Rose M. Ray, second year in 1898.

WEATHER REPORT FOR SEPTEMBER, 1900.

The following table gives comparisons with preceding 42 Septembers:

SEPT.	Number of Rains.....	Rain in Inches.....	Per cent of Cloudiness...	Prevailing Wind.....	Mean Temperature.	Maximum Temperature	Minimum Temperature	Mean Barometer.	Maximum Barometer...	Minimum Barometer...
1858.....	1	1.10	.....	.....	69.62	98	50	.....	.....	.....
1859.....	6	1.82	45	S	65.86	96	36	.....	.....	.....
1860.....	2	1.35	20	SW	72.44	100	43	.....	.....	.....
1861.....	12	8.06	45	S	68.23	95	41	.....	.....	.....
1862.....	6	4.15	19	S	71.70	97	51	.....	.....	.....
1863.....	4	.73	45	S	72.56	95	39	.....	.....	.....
1864.....	3	2.30	45	SW	73.58	104	42	.....	.....	.....
1865.....	4	1.23	.....	.....	74.21	90	49	.....	.....	.....
1866.....	10	6.23	44	S	61.37	90	40	.....	.....	.....
1867.....	6	3.50	27	S	69.12	92	49	.....	.....	.....
1868.....	7	5.72	54	S	60.28	87	34	.....	.....	.....
1869.....	5	1.83	40	SW	61.26	83	41	28.86	29.25	28.50
1870.....	9	4.57	62	SE	67.29	92	52	.....	.....	.....
1871.....	4	1.92	38	NE	66.43	91	39	.....	.....	.....
1872.....	9	5.70	31	S	65.01	96	37	.....	.....	.....
1873.....	4	1.85	45	SW	65.97	98	38	.....	.....	.....
1874.....	7	4.53	52	SW	65.16	98	39	28.74	29.00	28.42
1875.....	3	2.85	46	SW	65.88	97	36	28.88	29.13	28.64
1876.....	6	3.11	36	SW & NW	64.99	93	25	28.81	29.10	28.48
1877.....	2	1.52	36	SW	70.50	93	38	28.76	29.03	28.53
1878.....	5	3.22	30	S & SW	67.13	93	37	28.78	29.14	28.28
1879.....	4	4.30	33	S	66.43	92	44	28.71	29.02	28.40
1880.....	7	2.52	33	SW	64.96	84	40	28.68	28.95	28.36
1881.....	4	4.92	32	SW	72.12	101	36	28.56	28.80	28.19
1882.....	2	1.20	27	SW	70.30	102	46	28.73	28.96	28.40
1883.....	2	1.26	37	E	63.10	94	43	28.72	28.98	28.50
1884.....	5	3.33	60	SW	72.65	93	48	28.51	28.82	28.17
1885.....	8	4.38	44	NE	63.06	95	42	28.61	28.93	28.23
1886.....	5	1.14	29	SW	71.71	101	39	28.93	29.24	28.48
1887.....	8	6.88	31	S	66.95	94	38	29.06	29.35	28.75
1888.....	3	2.86	17	.....	64.69	96	34	29.04	29.26	28.70
1889.....	4	1.92	36	S	64.30	101	30	29.06	29.39	28.78
1890.....	7	3.24	43	E	64.67	95	30	28.95	29.32	28.55
1891.....	3	1.46	16	SW	71.95	97	31	29.02	29.19	28.76
1892.....	3	.36	8	S	71.03	97	37	28.89	29.12	28.58
1893.....	6	2.45	23	SW	70.91	109	34	28.80	29.19	28.27
1894.....	7	3.34	34	S	72.17	104	35	28.80	29.24	28.44
1895.....	3	1.02	18	S	74.93	105	29	28.78	29.23	28.39
1896.....	11	5.06	41	S	65.53	97	33	28.84	29.19	28.44
1897.....	3	.53	11	SW	75.92	104	44	29.02	29.35	28.73
1898.....	5	2.92	23	SW	72.11	102	40	28.84	29.30	28.53
1899.....	3	1.75	27	S	69.37	103	34	28.97	29.26	28.67
1900.....	11	5.37	34	S	71.63	100	44	28.91	29.25	28.51
Sums.....	232	129.50	1417	.....	2919.69	.....	.....	806.92	.....	.....
Means.....	5.4	3.01	34.6	SW	57.90	.....	.....	28.82	.....	.....

Temperature.—The mean temperature was 71.63°, which is 3.73° above normal. There have been 10 warmer and 32 colder Septembers in the past forty-two years. The highest temperature was 100° on the 5th and 8th; the lowest, 44° on the 27th and 29th—a monthly range of 56°. The greatest daily range was 33° on the 7th, the least 7° on the 28th. The mean daily range was 21.2°. The warmest day was the 5th, the mean being 87.5°; the coolest the 27th, the mean being 48°. The mean at 7 A. M. was 62.9°; at 7 P. M., 72.2°. The mean of the daily maxima was 82.23°; of the daily minima, 62.03°.

Barometer.—The mean pressure for the month was 28.91 inches, which is .09 inch above the normal. The maximum was 29.25 inches at 7 A. M. on the 27th, the minimum 28.51 inches at 7 A. M. on the 24th—a monthly range of .74 inch.

Cloudiness.—The per cent of cloudiness was 34, which is normal. The

per cent at 7 A.M. was 41.7; at 7 P.M., 26.7. Five days were cloudy, 9 partly cloudy, and 16 were clear.

Rainfall.—The total rainfall was 5.37 inches, which is 2.36 inches above normal. There have been 5 Septembers with more rainfall and 37 with less. Rain fell in measurable quantities on 11 days.

Wind.—The wind was from these directions the following number of times: North 10, northeast 3, east 10, southeast 12, south 13, southwest 8, west 1, and northwest 3. The total run of wind was 7685 miles, which is 662 miles above normal. This gives a mean daily velocity of 256.17 miles and a mean hourly velocity of 10.67 miles. The maximum daily velocity was 573 miles on the 24th; the minimum, 74 miles on the 28th. The maximum hourly velocity was 40 miles from 3 to 4 P.M. on the 24th.

WIND RECORD.

SEPTEMBER.	Total Miles	Mean Daily	Maximum Daily	Minimum Daily	Mean Hourly ...	Maximum Hourly ...
1889.....	5409	180.30	416	73	7.51	27
1890.....	5907	196.90	426	67	8.20	32
1891.....	7791	259.70	434	59	10.82	31
1892.....	7022	234.40	560	56	9.77	32
1893.....	7283	242.76	529	101	10.11	41
1894.....	6642	221.40	393	66	9.22	27
1895.....	9589	319.63	634	79	13.32	37
1896.....	6535	217.83	496	77	9.08	35
1897.....	6168	205.60	412	84	8.57	24
1898.....	7402	246.73	478	92	10.28	33
1899.....	6847	228.23	470	70	9.51	32
1900.....	7685	256.17	573	74	10.67	40
Sums.....	84280	2819.65	.....	.....	117.06	.....
Means.....	7023	234.97	.....	.....	9.76	.....

ERNEST R. NICHOLS, *Observer.*



DOMESTIC SCIENCE HALL,

Volume 27.

Number 2.

THE INDUSTRIALIST

ISSUED WEEKLY BY

KANSAS STATE
AGRICULTURAL COLLEGE

★ ★ ★

Editor-in-Chief, *Pres. E. R. Nichols*
Local Editor, *Prof. J. D. Walters*
Alumni and Former Students, *Prof. J. T. Willard*

★ ★ ★

Published by
PRINTING DEPARTMENT
J. D. Rickman, Supt.

BOARD OF INSTRUCTION.

ERNEST R. NICHOLS, A. M. (University of Iowa), President.....	512 Houston street
JOHN D. WALTERS, M. S. (Kansas State Agricultural College)	North end of Sixth street
Professor of Industrial Art and Designing.	
ALEXANDER B. BROWN, (Boston Music School), A. M. (Olivet).	817 Houston street
Professor of Music.	
JULIUS T. WILLARD, M. S. (Kansas State Agricultural College).....	1211 Moro street
Professor of Applied Chemistry.	
ALBERT S. HITCHCOCK, M. S. (Iowa Agricultural College)..	College Hill, 2 miles N. W. of College
Professor of Botany.	
FREDRIC A. METCALF, O. M. Superioris Honoris (Emerson Coll. Oratory) 6th and Poyntz ave.	
Professor of Oratory.	
GEORGE F. WEIDA, Ph. D. (Johns Hopkins).....	517 Fremont street
Professor of Pure Chemistry.	
HENRY M. COTTRELL, M. S. (Kansas State Agricultural College).....	College Campus
Professor of Agriculture, Superintendent of Farm.	
MISS MINNIE A. V. NELLIE STONER. (Boston N. S. of H. A.), B. S. (S. D. A. C.) Fourth and Osage	
Professor of Domestic Science, Dean of Women's Department.	
JOSEPH D. HARPER, M. S. (Rose Polytechnic Institute) Houston st., between 6th. and 7th. streets	
Professor of Mechanical Engineering, Superintendent of Shops.	
EDWIN A. POPENOE, A. M. (Washburn).....	Seventh and Osage streets
Professor of Horticulture and Entomology, Superintendent of Orchards and Gardens.	
FRANK C. LOCKWOOD, Ph. D. (Northwestern).....	Corner Fifth and Humboldt
Professor of English.	
BENJ. L. REMICK, Ph. M. (Cornell College).....	Fourth and Osage
Professor of Mathematics.	
BENJ. F. EYER	
Professor of Physics and Electrical Engineering.	
C. E. GOODELL, A. M. (Franklin)	
Professor of History and Economics.	
MISS HARRIET HOWELL, (Pratt Institute)	1211 Moro street
Superintendent of Domestic Art.	
JOSHUA D. RICKMAN, I. T. U.	911 Osage street
Superintendent of Printing.	
MISS JOSEPHINE T. BERRY, A. B. (Kansas University)	Sixth street and Poyntz avenue
Librarian.	
B. E. MCFARLAND, A. M. (Miami).....	Fourth and Osage
Principal Preparatory Department.	
MISS FLORENCE BALL	N. E. Cor. Juliette and Fremont streets
Director of Physical Training.	
MISS LORENA E. CLEMONS, B. S. (K. S. A. C.), Secretary.....	Corner Fourth and Laramie
SEPTIMUS SISSON, S. B. (Chicago), V. S. (Toronto)	Cor. Manhattan avenue and Moro
Associate Professor of Veterinary Science and Biology.	
D. H. OTIS, M. S. (Kansas State Agricultural College)	College Hill
Assistant Professor of Dairying.	
W. A. MCKEEVER, A. M. (Kansas University).....	
Assistant Professor of English and Philosophy.	
MISS JOSEPHINE C. HARPER, Instructor in Mathematics	Corner Sixth and Pierre streets
MISS ALICE RUPP, (Indiana State Normal), Instructor in English	
CHARLES EASTMAN, Cadet Major and Acting Commandant	
William L. House, Foreman of Carpenter Shop	Corner Sixth and Colorado
Chas. W. Pape, M. S. (K. S. A. C.), Ass't in Zoölogy and Ass't Curator Museum.....	1104 Moro
R. W. Clothier, M. S. (K. S. A. C.), Assistant in Chemistry. Fremont, between Fifth and Sixth	
Margaret J. Minis, Assistant Librarian	Fourth and Moro streets
R. H. Brown, M. T. (Kan. Con. of Music), B. S. (K. S. A. C.), Ass't in Music. 817 Houston street	
J. M. Westgate, M. S. (K. S. A. C.), Assistant in Botany. Cor. Manhattan avenue and Vattier	
May Secrest, B. S. (K. S. A. C.), Assistant in Domestic Art, Cor. Leavenworth and Seventh	
Wm. Anderson, B. S. (K. S. A. C.), Assistant in Mathematics. Cor. Humboldt and Juliette ave	
Gertrude Barnes, Assistant Librarian	Cor. 9th and Moro
Albert Dickens, B. S. (K. S. A. C.), Assistant in Horticulture, Fremont and Manhattan avenue	
William Baxter, Foreman of Greenhouses	
J. G. Haney, B. S. (K. S. A. C.), Ass't in Feeding and Field Experiments, Manhattan ave and Kearney	
Mary Pritner, B. S. (K. S. A. C.), Assistant in Domestic Science	Cor. 7th and Leavenworth
Theodore Lindquist, M. S. (Northwestern), Ass't Physics.....	Cor. Fifth and Humboldt
W. M. Sawdon, B. S. (Purdue), Assistant in Mechanics.....	Juliette and Houston
O. I. Purdy, B. S. (K. S. A. C.), Assistant in Printing.....	1216 Fremont street
Ada Rice, B. S. (K. S. A. C.), Assistant in Preparatory Department.....	Osage and 8th. street
Louis Wabnitz, Foreman Iron Shops	5th and Osage
Henry Van Leeuwen, Instructor in Cheese Making (U. W. D. S.)	Manhattan and Kearney
E. W. Curtis, Instructor in Butter Making	
Florence L. Grant (Mass. Normal Art School), Assistant in Drawing	Fourth and Osage
A. T. Kinsley, B. S. (K. S. A. C.), Assistant Veterinary Department.....	
Elizabeth Agnew, B. S. (K. S. A. C.), Assistant in Domestic Science.....	
Jacob Lund, M. S. (K. S. A. C.), Engineer.....	Cor. Tenth and Kearney
C. Jeanette Perry, B. S. (K. S. A. C.), Executive Clerk.....	Corner Colorado and Fifth
W. R. Lewis, Janitor	N. E. corner Main College Building
Archie Huycke, Secretary to President	Manhattan avenue and Kearney

THE INDUSTRIALIST.

VOL. 27.

MANHATTAN, KAN., OCTOBER 9, 1900.

No. 2

VACATION ON THE COLLEGE FARM.

THE WEATHER.

AT Commencement time the prospects were most flattering for abundant crops of everything. The soy beans, cow peas, corn and Kafir-corn never gave better promise. The thirty acres of tame grasses—including fifteen acres of alfalfa sown last spring, was bidding fair to make several crops. But the weather, like many College people, took a vacation, especially the moisture department. There have been only three drier Junes in forty-two years. July and August also made good records in this line. But it seemed that after the middle of September, when the College people began to return, that the "rain maker" awoke from his long vacation and began to make up time with such a vengeance that there have been only five wetter Septembers in forty-two years.

Riley county is in the extreme eastern part of the dry belt this year. Crops are better east of the rivers, and continue to get better down to Maple Hill, near Topeka, where there is little evidence of drought. From Manhattan west, through Ashland and Moehlman bottoms to Junction City, crops seem to have suffered as badly as in any portion of the State.

The rainfall last summer was particularly unevenly distributed. There were more heavy local showers and fewer general rains, apparently, than usual. This was noticeable even on the College farm, in that most of the local showers seemed to miss us entirely or only rain enough to aggravate the crops.

THE CROPS.

The chinch-bugs, after having despoiled most of the Botanical Department's wheat just west of the shops, began an invasion on the newly sown *Bromus Inermis*. They continued their depredations until nearly the entire field was destroyed, and with it part of the meadow oat grass that was adjacent to the *Bromus Inermis*. The grasses not attacked by the bugs stood the unfavorable season

remarkably well, which can be largely attributed to the care in seeding. Our motto is to "farm all the time as though dry weather was expected." We practice our preaching by following the very best methods possible for the preservation of moisture.

A perfect stand was not secured on all the land sown to alfalfa, but much better results were secured than could have been expected considering the weather. The late rains have put the newly sown grass and alfalfa in excellent condition.

Of the eleven varieties of beans tried this year we cannot say that any proved more satisfactory than the early yellow soy, the variety that has been grown for a number of years on the College farm. This has been a trying year for the soy beans and they have stood the trial very satisfactorily. From the 5th to the 11th of August was a week of extremely hot winds that literally blistered every green thing and caught a large part of the crop just as the beans were forming in the pods, and they did not recover. The later planting and later varieties were not so badly damaged. One field, "West Field W," yielded only four bushels per acre. This field had never grown beans before, and is in very poor condition; has been farmed by renters with the sole end in view of getting the most from it possible, and no attention given to keeping up the fertility. "East Field W," which is very similarly situated, but grew a crop of beans last year and was thoroughly inoculated with nodule-forming bacteria, and has otherwise received better attention, gave a yield of seven and one-half bushels per acre. A small field near the barn, which had very favorable conditions, gave a yield of thirty-five bushels per acre. The last yield shows possibilities, and it would not be impossible to produce the conditions on a large scale. The land is well situated, but the main cause of the increased yield was doubtless due to the fertilizing effect of the alfalfa. The alfalfa was plowed up spring before last. The average for the beans this year was about six bushels per acre.

Corn suffered the worst of any of the crops. Of the five varieties planted, none of them matured any grain at all and made very poor fodder. Kafir-corn did better, in spite of being planted very thick considerable seed matured.

This has been our first year with the cow pea, and as yet we are hardly ready to express an opinion regarding it. Nine varieties were planted, and they have demonstrated at least that they

are wonderful drought-resisters. They stayed green and continued to grow when the Kafir-corn was dried up enough to burn. The seeding has not been very satisfactory, but this may be due to the dry weather. We have tested several varieties of cow peas for hay, as well as the soy beans. We find the cow pea difficult to cure owing to the large amount of water in the somewhat fleshy stalks. Also, the leaves seem to dry much more quickly than the stalks, the leaves failing to evaporate the moisture from the stalk as appears to be the case with the soy bean, which is much more easily cured. However, some very fine cow-pea and soy-bean hay has been put in the barn and will be fed to the cows this winter.

The old alfalfa fields have more than gratified us this year, although the yield has been lighter than usual. All have been cut four times, and a part five times, and it is in much better shape than usual at this time of year. The trial of disking the alfalfa has given splendid satisfaction. Besides disking the alfalfa thoroughly early in the spring we disked after each cutting, when the ground was dry, setting the disk so as to cut well but not tear the roots too much, and then harrowing cross-wise of the disking. This left a good surface mulch, besides destroying much of the grass which usually starts immediately after cutting the alfalfa. We can recommend disking much more strongly than we could before this summer. The disk harrow will do more to make alfalfa a success after once started than any other thing. It is the only remedy and prevention for crab grass, foxtail, grass-hoppers, and army or cut worms.

PERSONAL.

The dry weather somewhat simplified the work on the farm, so that a very uniform force was employed throughout the summer. Messrs. L. S. Edwards, C. F. Smith and H. M. Nash filled the positions as teamsters. W. L. English and O. H. Elling were also kept busy. These young men took a splendid interest in the work of the farm and in following out the Agriculture teaching. The variety of work and the different experiments under progress make the work interesting and instructive. Persons getting employment in any of the departments about College are fortunate, and the more there are to apply the more efficient the forces can be made for the departments. No student should be regularly employed in any department if he is not directly interested in the

work of the department aside from the money received for his services. The money is a small part of the value he may receive.

The cows and calves have been cared for by Messrs. H. M. Bainer, D. L. Kent, J. M. Jones, and C. H. Clark, and for the past month E. B. Patten, '98, has succeeded Mr. Bainer as herdsman. There appears to be something fatal about the position as College herdsman. T. G. Hanna, who served in that capacity two years ago, was married soon after he left the College. E. H. Webster answered to roll-call as herdsman only a short time and followed the example of Mr. Hanna. Assistant Professor Otis was compelled at times to come in very close touch with the herdsman work, and all know the result. J. A. Conover, the popular skim-milk calf rearer and herdsman, passed through last week with his new wife to assume charge of the dairy herd on the famous Watson ranch at Kearney, Neb. H. M. Bainer, '00, was herdsman only a few months, and is now as thoroughly installed on his old home farm as many can hope to be at forty years of age. Mr. Patten, the present incumbent, shakes his head, but he smiles as he goes down to feed the calves. Time will tell. The men that have served here in this capacity all have good positions. Mr. Hanna is butter maker at Beloit, one of the largest factories of the Continental Creamery Company's system, and Mr. Webster is assistant butter maker at the Agricultural College at Ames, Iowa. The positions of Messrs. Conover and Bainer were noted above.

Splendid work has been done in rearing calves in various ways the past summer, and the calves are here as evidence. The dry season gave a splendid opportunity of studying the effect of using green feed to keep up the milk yield. The results were very gratifying.

MACHINERY.

The old traction engine which was purchased to furnish hot water and steam for the dairy last winter was thoroughly overhauled and fitted up by the Mechanical Department. A 32 x 48 Altman & Taylor "Dixie" separator was purchased, and the outfit we can turn out now and the work that can be done at threshing beans or anything else is a credit to the institution. A Brown spring-tooth cultivator, a fourteen-inch John Deere stirring plow and a Kemp & Burpee No. 2 manure spreader have also been added to the list of farm implements.

While the past vacation has not been so favorable for the pro-

duction of crops it has not been unfavorable for the studying of conditions which must too frequently be met in Kansas.

J. G. HANEY.

WHAT SHALL A YOUNG MAN STUDY?

IN this morning's mail was a letter asking for a graduate from our Farm course to fill a place as farm superintendent in a New England school. The place offers a salary of \$800 a year to start with, and an up-to-date, energetic young man is wanted who has had thorough training in farm work and studies and who has good executive ability. This letter had been read but not answered when a College graduate walked into the Farm office and said he wanted to know what he should do to fit himself to take a position in farm work. This young man was a graduate from the general college course and had a good general training in many things, but was not trained to do any one thing well. He found that the only thing that his general training fitted him for was as a teacher in the district schools, where he had to compete with girls turned out from city schools who were willing to work for from \$25 to \$30 a month and board themselves.

Last year one of our Farm-course boys made a special study of feeding skim-milk calves and dairy cows. Last spring he had five places open to him at one time, none of which paid less than \$40 a month and board to start with, and some of them offering good opportunities to work up. Last week we met a graduate from a general college course who was getting \$40 a month and boarding himself. He was a clerk in a lumber yard, with no chance of promotion. One of our graduates who made a specialty of good butter making was paid \$900 for his first year's work, and to-day two places are bidding for his services. Another graduate from a general college course believed that after college days were over general culture should be continued, and for fourteen years took up postgraduate work, each year taking different studies so as to broaden the view. The only work this student is competent to do to-day is to teach a small country school or work as a laborer. These are only a few instances of the many with which the writer is familiar.

The first thing that 999 out of 1,000 students must do after they leave college is to make a living, and for most of them this will be

a main problem through life. There is a constant demand for those who are skillful in industrial work; the market is overstocked for men in general professional lines. Kansas wants young men who can manage farms, feed cattle, make a dairy herd pay, superintend an orchard or nursery, do good work in machine shops or get power from a boiler and engine economically. The young man who knows only how to teach school or work in a store or do office work finds two other men after the same place he is trying to get, and in the end loses his place because a young lady will do the work for one-half what it costs him to live, because all she wants is money for wedding clothes and then she expects to resign.

Travelers say the world is full of men who have taken a good general college training and who have spent thousands on their education who are glad to get places as waiters at lunch counters or as motorneers on street cars, while as soon as a man has fitted himself to feed skim-milk calves successfully half a dozen men are waiting to hire him at good wages.

The old theory that a properly educated man must have spent his time in studying dead languages and mythology is dead; the later idea that a true education consists in an education general in all things and a special training in none is dying. The theory of a general college education was based on the idea that if a student knew a little of many things his mind was broadened and his ability strengthened, while the specialist who knew much about one thing and a little about a few others had a narrow view of life and work. Facts show the contrary. The man who is an expert in one line usually has a liberal appreciation and knowledge of the work of specialists in other lines and is most often the man of broad training. His skill in his own line fits him to quickly comprehend work in other lines. The best informed man in literature, geography and history in the writer's acquaintance is a specialist in entomology. The general student may be likened to a traveler who, to secure a view of the country, visits each spot in the valley while the specialist climbs to the highest mountain top and can see not only all that the traveler in the valley sees but miles beyond.

The writer would advise every young man to determine early in his college course what special line he wants to take up in after-life and then bend all his work to fitting himself to become a

broad-minded, well-fitted specialist. Suppose that the student selects steer feeding as his life work, he will find that his interest in this will make chemistry a living study. He can learn chemistry more quickly and become thorough in it because he will know that this science will be of great help in making money with his steers. He will find physics easy and fascinating and, if he is the right stuff, he will go farther than the rest of his class in this study, because upon the application of the laws of physics depends his success in raising feed for his steers in time of drought.

These are only two illustrations of a fact that is general. The student who has a special object in view can learn easier, become more interested, and will go deeper in his general studies than the student whose only interest in college work is to obtain general culture.

The student may find after he has finished his college course that his ideas have changed and that he wants to follow a different line of work for life from that first selected. Even in this case he has gained by working towards a specialty. His quickened interest and deeper delving in all his studies makes him a stronger man for his new work than his neighbor who has studied for general culture only.

H. M. COTTRELL.

PRINTED LETTER-HEADS FOR FARMERS.

FOR several months the writer has been handling the greater part of the correspondence in the Farm Department of the College, where \$150 was spent last year for postage alone. Hardly a week has passed that some letter has not had to be filed away unanswered because the name of the writer or his post-office address was illegible. Business men seldom sign their name so that it can be read without referring to the letter-head for the exact spelling. Men who have less writing to do sign their names plainly, generally speaking, but seem to fail to understand that the address is important and should be plainly written. Sometimes the name of the town can be found on the envelope if the postmark happens to be plain, or if a few letters can be deciphered the postal guide can be referred to.

Where we can read the name of the town but cannot read the name of the writer we can sometimes find someone among our students who is familiar with the name and can read it for us. In

one letter we received, the writer's initials were very plain but we could not even guess at the name. We had the name of the post-office. We went to the office of the Secretary of the College and looked over the list of students. We found one who had come from this post-office. We did not know the student but found someone who did, and by standing in the halls while the classes were changing rooms we found the student, who knew at once to whom the answer should be addressed. Where the writing is not quite so bad as it was in the case just mentioned, we sometimes address the envelope by writing the name as near as we can like the original, trusting that the postmaster at the other end will be familiar enough with the name to read our writing and deliver the letter to the proper party. This is a very unsatisfactory way of doing business, but in some cases it is the best thing that can be done, since in the spelling of names there is no rule which can be followed, and the difference in a letter may make all the difference in the world.

Where printed stationery is used there is no trouble at all in answering the letters we receive, since we are not dependent upon the writer, the printer having made it plain for us. A great deal is to be gained by using printed letter-heads and envelopes. The expense for these is very low. In some cases it is cheaper to use the printed stationery, for the printer, by buying large orders of stock, buys to the best advantage and gets paper and envelopes at lowest prices. These he prints, adds a small profit to pay for the work done, and still is able to sell to his customer at a rate as low as they can be obtained for at a book-store. Printed envelopes at the average Kansas printing-office sell for \$2.50 per box of 500 envelopes and printed letter paper costs about \$2.50 for 500 sheets, business size. At present prices this is less expensive than plain paper and envelopes purchased at the book-store.

Not only is the expense of letter-heads low, but the writer can send out his mail in a more business-like form. Appearance is all a stranger has to judge from, and a man who will write a business letter on a torn sheet of soiled paper, taken from an old tablet, though he may be a good man, will be at once "sized up" by a stranger as being a man who would let his wife chop the wood.

The farmer is not compelled, as is the business man, to keep up appearances and it is easy for him to neglect a thing of this sort, but he will be paid for going to the trouble of using printed

stationery. He sees the name of his farm with his name and post-office address on his letter paper and it makes him feel better every time he writes. He feels that he has a reputation to maintain and begins to curry his horses before driving to town. He writes to the Director of the Experiment Station for bulletins, and there is no trouble in getting his name correctly on the bulletin mailing list. He follows out the experiments conducted by the College and the year after pays up his mortgage. It is all due to the letter-head and the return on his envelope. Do not put it off any longer, but call at your printing-office at once and order a good supply.

MARY L. WAUGH.

Prof. B. L. Remick, Ph. M., lately elected to the chair of mathematics, made vacant by the resignation of Dr. Mary Winston, received his early education in the public schools of Waverly, Iowa, becoming a graduate of the high school in 1884. In 1885 he entered the freshman class of Cornell College, Mt. Vernon, Iowa, and at the end of four years took the degree of Ph. B. from the same institution. For three years succeeding his graduation he was an instructor in mathematics in his alma mater, obtaining at the end of that time the master's degree. In 1892 he entered Johns Hopkins University and spent one year there in study mainly along mathematical lines. The following year he was instructor in mathematics in the Academy of Northwestern University, resigning at the end of the year in order to pursue graduate work in his specialty at the University of Chicago. In 1895 he accepted the chair of mathematics at the University of the Pacific, in California. The succeeding period of two years was spent as a student of mathematics and astronomy at the University of Chicago. In 1898 he received an appointment as associate in mathematics at Bradley Polytechnic Institute, Peoria, Ill. He was reappointed in June of the present year, and also made examiner, but did not enter upon the duties of the position. Professor Remick comes to us with very strong recommendations and the College can congratulate itself on his election to the chair of mathematics.

Messrs. Hinds & Noble have recently published "Songs of all the Colleges," a book that is bound to be popular not only with college students but with all music lovers.

THE INDUSTRIALIST.

Published weekly during College year for \$1 per annum; students and alumni, 50 cents.

KANSAS STATE AGRICULTURAL COLLEGE.

Manhattan, Kansas.

☆ ☆ ☆

PRES. E. R. NICHOLS.....Editor-in-Chief

PROF. J. D. WALTERS.....Local Editor

PROF. J. T. WILLARD.....Alumni Editor

BOARD OF REGENTS.

HON. E. T. FAIRCHILD, President... Ellsworth

HON. J. S. McDOWELL, Vice-President,
Smith Center

HON. W. T. YOE, Treasurer.....Independence

HON. WM. HUNTER, Loan Comm'r, Blue Rapids

HON. MRS. SUSAN J. ST. JOHN.....Olathe

HON. CARL VROOMAN.....Parsons

HON. J. M. SATTERTHWAITE.....Douglass

PRES. E. R. NICHOLS, Sec. *ex-officio*.

LOCAL NOTES.

The lead work and plumbing necessary to equip the temporary Chemical laboratory was done by the shop force.

Last week the Mechanical Department repaired and tested a Marsh steam pump for the Manhattan Creamery Company.

The C. P. Dewey portable engine, which has been undergoing repairs at the College shops, is now completed and in good working order.

An import order has been placed for more chemicals and apparatus. It is hoped that the materials may be here in time for the work of the winter term.

Some excellent photographs of alfalfa roots were taken by the Farm Department. The excavations are still open and inspection granted. Call at the barn and inquire.

The postage bill of the Farm Department for July, August and September was \$31.15. Miss Waugh was kept busy almost the entire summer answering correspondence.

Professor Hitchcock has been elected secretary of Section G, Botany, of the American Association for the Advancement of Science, which meets at Denver next year.

Last week the Farm Department was asked to recommend a graduate from its work for a place as farm superintendent in a New England school. The salary was \$800 to begin with.

The last number of the *Experiment Station Record* contained a three-page write-up of our new Agricultural Hall, illustrated with a photo-engraving of the exterior and the floor plans.

Dr. Arnold Emch, assistant professor of mathematics in Colorado State University, has a handsomely illustrated article in the October number of the *Monist*, on "The Mathematical Principles of Esthetic Art."

From July 17 to September 26 Professor Cottrell attended thirty-six farmers' institutes, meeting 26,790 people. He traveled 5220 miles—426 miles by wagon road. The other members of the College force have not kept records of their travel in institute work, but it is probable that the total mileage for the summer vacation farmers' institutes was considerably over 25,000 miles—equal to a vacation trip around the globe.

By the kindness of the *Kansas Farmer*, fifteen agricultural papers are kept on file at the College barn. There is also a very complete set of the bulletins from the various states and the United States Department of Agriculture.

Doctor Weida has been asked to read a paper before the South-Kansas Teachers' Institute, which meets at Newton, Kan., during the Thanksgiving holiday. The teachers of that section express a desire to become better acquainted with the work of this College, and desire a representative from our Faculty at their annual meetings.

Last Thursday morning Coffey's hack committed suicide and left about fifteen College girls in the mud. The driver carried the passengers to a dry mud side-walk and they "mudded" the rest of the way from the park up to College. A more perfect collection of disgusted and bemudded girls never said bad things about Manhattan side-walks, mud, rain and such common things than that dripping crew gave vent to when they reached College.—*Students' Herald*.

Our thanks to Prof. K. C. Davis for a copy of chapters 15 to 17 of the Minnesota Botanical Studies. Mr. Davis is the author of this part of the report. The subjects treated are: Native and Garden Delphiniums of North America; Native and Cultivated Ranunculi of North America, and Segregated Genera; A Synonymic Conspectus of the Native and Garden Thalictums of North America. The report on these three subjects covers about one hundred pages.

The last INDUSTRIALIST states that since July 1 a total of ninety-seven farmers' institutes had been held by the Faculty. During the last week of September the following additional institutes were conducted:

Date.	Place.	Speakers.	Attendance.
September 24	Arlington.....	Hitchcock and Otis	200
" 24	Sego	" "	150
" 25	Gage	" "	75
" 26	Soldier.....	Cottrell and Walters	200
" 26	Kingman.....	Hitchcock and Otis	25
" 26	Castleton.....	" "	25
" 27	Pretty Prairie....	" "	110
" 29	Andall.....	" "	75

At some of these places arrangements had been made for large meetings, but the constant heavy rains cut the attendance down.

In a recent article on the "Kansas Educational Institutions," the *Kansas Farmer* makes the following pertinent statements about the work and methods of this College: "The State Agricultural College comes closer to the farmer than either of the others. Its course of study is arranged with special reference to the needs of the young people who come from the farms for as liberal an education as the time and means at their command will permit. In this course of study every branch has been left out

which could possibly be spared, with the result that an exceedingly practical course remains. No languages other than English are taught. Much less attention is given to ethical subjects than in other institutions of equally extensive courses, but such subjects as have direct application in either 'agriculture or the mechanical arts' are taught with great care and given special prominence in the Agricultural College course. Inasmuch as modern agriculture is becoming more and more an application of science to the production of food and fiber, the Agricultural College course of study assumes a distinct and positive scientific character. One of the results of this is that in the industrial and scientific world demands are made upon the graduates of this institution in the filling of positions requiring a high degree of scientific training. The United States Department of Agriculture has been very persistent in its demands for experts in the various branches of its scientific work. Some of the great shops—notably the manufacturing and repair shops of the Santa Fe railroad, of Topeka—have been giving strong preference to the trained men of the Agricultural College in selecting employees for their works. While not so immediately noticeable, the work of these young men on the farms is introducing better and more profitable agriculture than is possible without the kind of training they receive. It must not be assumed that literary training is overlooked at the Agricultural College. Perhaps no institution gives more competent attention to English literature and the general subjects of a thorough English education than the Agricultural College. While the attendance here has this year passed the thousand mark, not unlikely the near future will see this number multiplied many times. The fact that the person who is equipped with a thorough education along practical lines is better able to meet the competitions of life than the less thoroughly informed is appreciated now as never before, and will be appreciated in the near future more fully than now. The year just closing at these institutions has been a remarkably successful one. The large graduating classes constitute a notable addition to the working force of the State, especially to that part of the force which directs and applies physical energies wisely. The time ought to come soon when the young man or young woman in Kansas who does not have the advantages of a college education or its equivalent will be the exception."

ALUMNI AND FORMER STUDENTS.

Ed. H. Webster ['96], manager of the creamery at Meriden, has been elected assistant professor of the dairying department of the Iowa State Agricultural College at Ames, Iowa. Mr. Webster will assume his duties about November 1. The many friends here of Mr. and Mrs. Webster will be pleased to see his promotion though loth to have them leave the State. Mr. Webster is another graduate of the Agricultural College who chose a special line and pursued it.—*Randolph Enterprise*.

THE CULTIVATED MILLETS.

(Press Bulletin No. 69, from Botanical Department.)

THERE are several different agricultural grasses of economic importance sold in the trade under the general name of millet, hence there is more or less confusion.

FOXTAIL MILLETS. To this group belong what is generally sold as "Common Millet" and also a number of other varieties, all belonging to the species known to botanists as *Setaria Italica*, and which is considered by many to have been originally derived from the common weedy green foxtail (*Setaria viridis*). The seed is borne in a compact cylindrical, often more or less nodding cluster at the top of the stalk. The seed can be distinguished by the numerous minute transverse wrinkles. There are four groups of varieties. 1. Common Millet, which is more resistant to drought. 2. German Millet, also called Golden Millet and Bengal Grass, the commonest variety in the South; the latest of the foxtail millets and coarser in foliage. Some of the so-called Japanese millets belong here. 3. Golden Wonder Millet, which under favorable conditions gives the largest yield of seed, but is susceptible to drought. 4. Hungarian Millet or Grass, more commonly cultivated in the Northwest. This has the disadvantage of volunteering or persisting in the soil. The "New Siberian Millet" is related to Hungarian Grass, but may be a distinct variety. There are a number of different varieties of each of the groups mentioned:

BARNYARD MILLETS. These have been long grown in the Old World both for forage and food for man, but have only recently received much notice in this country. They received their name from the fact that they are derived from the common and well-known barnyard grass, a weed in cultivated soil. They are characterized by having the flowers in branching clusters like the barnyard grass (*Panicum Crus-galli*), and the seed smooth and about twice as long as the foxtail millets. Barnyard Millet gives promise of making a successful forage grass in this country. Closely allied to this are the Shama Millet (*Panicum colonum*) and Sanwa Millet (*Panicum frumentaceum*), both grown extensively in India and other parts of Asia for the seed which is used as food by the poorer classes. They do not give promise of success in this country.

BROOM-CORN MILLETS. These are derived from *Panicum milaceum*. This species has been cultivated for centuries in Europe, where it is the "Common Millet." It is not extensively grown in the United States, but is offered in the trade under the name of Broom-corn Millet and Hog Millet. The seeds are born in loose, drooping clusters, the branches of the cluster being long and slender, somewhat resembling the seed cluster of Broom-corn, whence the name. The seeds are from white to yellow and dark red, and like the preceding sorts are flat on one side and convex on the other and resemble the Barnyard Millet in size and absence of wrinkles.

PEARL MILLET (*Pennisetum spicatum* or *P. typhoideum*). Extensively cultivated in Africa for the seed which is used for food, and occasionally in the southern United States where it is used for fodder. Plants tall and stout, the seeds born in a dense cylindrical cluster, but without the bristles characteristic of the Foxtail Millets.

INDIAN MILLET (*Sorghum vulgare*). Certain varieties of sorghum or cane are very extensively grown in Africa and Asia for the seed which is used for food. They also go under the name of Chinese Millet, Black Millet, African Millet, Guinea Corn, etc. At present these varieties of sorghum are not grown in the United States on a commercial scale.

A. S. HITCHCOCK.

KANSAS STATE AGRICULTURAL COLLEGE

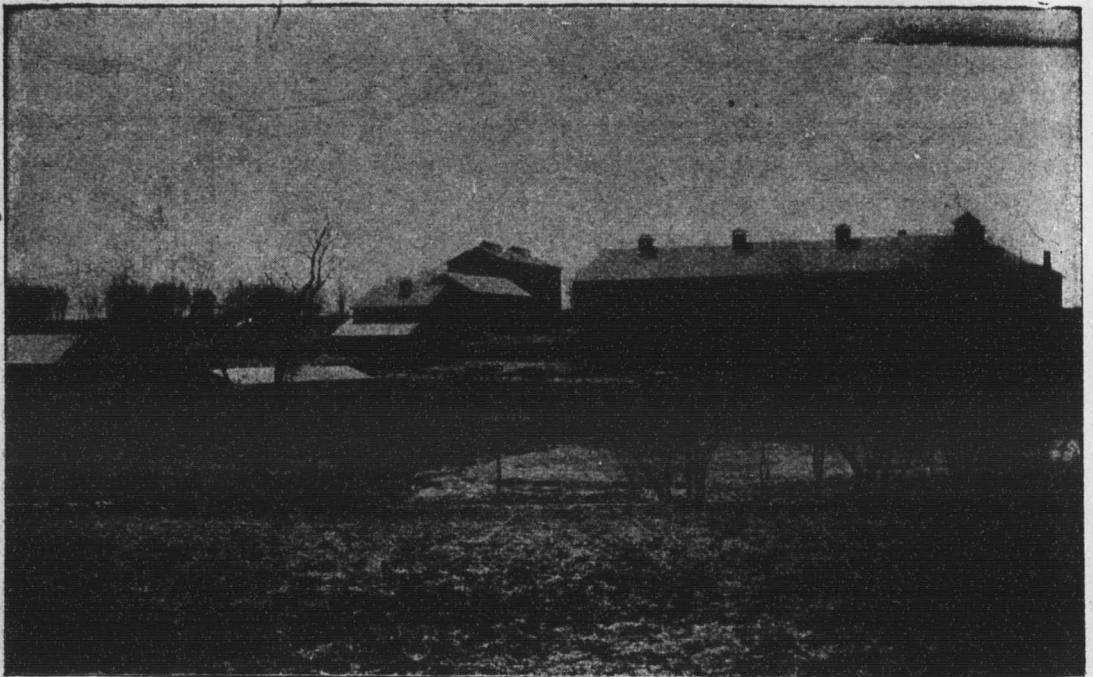
FIVE COURSES OF STUDY.....

Each complete in itself and leading to the degree of Bachelor of Science, are as follows:

- 1—Agriculture
- 2—Mechanical Engineering
- 3—Electrical Engineering
- 4—Domestic Science
- 5—General Science

This Institution

is supported by the General Government and by the State of Kansas, and is designed, by its instruction, to promote the liberal and practical education of the industrial classes in the several pursuits of life.



COLLEGE classes are open to both sexes. Tuition is free in all departments. There is no charge for laboratory supplies. Room and board can be had at very reasonable rates. The yearly expenses, exclusive of clothes and traveling expenses, are between \$100 and \$200. All College laboratories, shops and class rooms are well supplied with needful apparatus and appliances. Practical application is made of the principles learned in the study of the sciences, and thus the College is made a school of applied science.

Domestic Science.

A full course in Domestic Science now in successful operation. The work in the Department of Domestic Science forms an interesting part of the instruction given in the women's course. It is of great practical and disciplinary value.

FOUR SHORT COURSES

Open to students of mature age who cannot, on account of time or money, take one of the four-year courses.

- 1—Apprentice
- 2—Domestic Science
- 3—Dairying
- 4—Agricultural

For catalogue or other information, address

**ERNEST R. NICHOLS, A. M., ACTING PRES.,
MANHATTAN, KANSAS.**

(Cut represents Farm Barn.)

Volume 27.

Number 3.

THE INDUSTRIALIST

ISSUED WEEKLY BY

KANSAS STATE
AGRICULTURAL COLLEGE

☆ ☆ ☆

Editor-in-Chief, *Pres. E. R. Nichols*
Local Editor, *Prof. J. D. Walters*
Alumni and Former Students, *Prof. J. T. Willard*

☆ ☆ ☆

Published by
PRINTING DEPARTMENT
J. D. Rickman, Supt.

Historical Society

BOARD OF INSTRUCTION.

ERNEST R. NICHOLS, A. M. (University of Iowa), President.....	512 Houston street
JOHN D. WALTERS, M. S. (Kansas State Agricultural College)	North end of Sixth street
Professor of Industrial Art and Designing.	
ALEXANDER B. BROWN, (Boston Music School), A. M. (Olivet).	817 Houston street
Professor of Music.	
JULIUS T. WILLARD, M. S. (Kansas State Agricultural College).....	1211 Moro street
Professor of Applied Chemistry.	
ALBERT S. HITCHCOCK, M. S. (Iowa Agricultural College) ..	College Hill, 2 miles N. W. of College
Professor of Botany.	
FREDRIC A. METCALE, O. M. Superioris Honoris (Emerson Coll. Oratory) 6th and Poyntz ave.	
Professor of Oratory.	
GEORGE F. WRIDA, Ph. D. (Johns Hopkins).....	517 Fremont street
Professor of Pure Chemistry.	
HENRY M. COTTRELL, M. S. (Kansas State Agricultural College).....	College Campus
Professor of Agriculture, Superintendent of Farm.	
MISS MINNIE AVA NELLIE STONER. (Boston N. S. of H. A.), B. S. (S. D. A. C.)	Fourth and Osage
Professor of Domestic Science, Dean of Women's Department.	
JOSEPH D. HARPER, M. S. (Rose Polytechnic Institute) Houston st., between 6th. and 7th. streets	
Professor of Mechanical Engineering, Superintendent of Shops.	
EDWIN A. POPENOE, A. M. (Washburn).....	Seventh and Osage streets
Professor of Horticulture and Entomology, Superintendent of Orchards and Gardens.	
FRANK C. LOCKWOOD, Ph D (Northwestern).....	Corner Fifth and Humboldt
Professor of English.	
BENJ. L. REMICK, Ph. M. (Cornell College).....	Fourth and Osage
Professor of Mathematics.	
BENJ. F. EYER.....	_____
Professor of Physics and Electrical Engineering.	
C. E. GOODELL, A. M. (Franklin)	_____
Professor of History and Economics.	
MISS HARRIET HOWELL, (Pratt Institute).....	1211 Moro street
Superintendent of Domestic Art.	
JOSHUA D. RICKMAN, I. T. U.....	911 Osage street
Superintendent of Printing.	
MISS JOSEPHINE T. BERRY, A. B. (Kansas University)	Sixth street and Poyntz avenue
Librarian.	
B. S. MCFARLAND, A. M. (Miami),.....	Fourth and Osage
Principal Preparatory Department.	
MISS FLORENCE BALL.....	N. E. Cor. Juliette and Fremont streets
Director of Physical Training.	
MISS LORENA E. CLEMONS, B. S. (K. S. A. C.), Secretary.....	Corner Fourth and Laramie
SEPTIMUS SISSON, S. B. (Chicago), V. S. (Toronto)	Cor. Manhattan avenue and Moro
Associate Professor of Veterinary Science and Biology.	
D. H. OTIS, M. S. (Kansas State Agricultural College).....	College Hill
Assistant Professor of Dairying.	
W. A. MCKEEVER, A. M. (Kansas University).....	_____
Assistant Professor of English and Philosophy.	
MISS JOSEPHINE C. HARPER, Instructor in Mathematics.....	Corner Sixth and Pierre streets
MISS ALICE RUPP, (Indiana State Normal), Instructor in English.....	_____
CHARLES EASTMAN, Cadet Major and Acting Commandant.....	_____
William L. House, Foreman of Carpenter Shop.....	Corner Sixth and Colorado
Chas. W. Pape, M. S. (K. S. A. C.), Ass't in Zoölogy and Ass'nt Curator Museum.....	1104 Moro
R. W. Clothier, M. S. (K. S. A. C.), Assistant in Chemistry. Fremont, between Fifth and Sixth	
Margaret J. Minis, Assistant Librarian.....	Fourth and Moro streets
R. H. Brown, M. T. (Kan. Con. of Music), B. S. (K. S. A. C.), Ass't in Music. 817 Houston street	
J. M. Westgate, M. S. (K. S. A. C.), Assistant in Botany, Cor. Manhattan avenue and Vattier	
May Secrest, B. S. (K. S. A. C.), Assistant in Domestic Art, Cor. Leavenworth and Seventh	
Wm. Anderson, B. S. (K. S. A. C.), Assistant in Mathematics. Cor. Humboldt and Juliette ave	
Gertrude Barnes, Assistant Librarian.....	Cor. 9th and Moro
Albert Dickens, B. S. (K. S. A. C.), Assistant in Horticulture, Fremont and Manhattan avenue	
William Baxter, Foreman of Greenhouses	_____
J. G. Haney, B. S. (K. S. A. C.), Ass't in Feeding and Field Experiments, Manhattan ave and Kearney	
Mary Pritner, B. S. (K. S. A. C.), Assistant in Domestic Science	Cor. 7th and Leavenworth
Theodore Lindquist, M. S. (Northwestern), Ass't Physics.....	Cor. Fifth and Humboldt
W. M. Sawdon, B. S. (Purdue), Assistant in Mechanics.....	Juliette and Houston
O. I. Purdy, B. S. (K. S. A. C.), Assistant in Printing.....	1216 Fremont street
Ada Rice, B. S. (K. S. A. C.), Assistant in Preparatory Department.....	Osage and 8th. street
Louis Wabnitz, Foreman Iron Shops.....	5th and Osage
Henry Van Leeuwen, Instructor in Cheese Making (U. W. D. S.)	Manhattan and Kearney
E. W. Curtis, Instructor in Butter Making.....	_____
Florence L. Grant (Mass. Normal Art School), Assistant in Drawing.....	Fourth and Osage
A. T. Kinsley, B. S. (K. S. A. C.), Assistant Veterinary Department.....	_____
Elizabeth Agnew, B. S. (K. S. A. C.), Assistant in Domestic Science.....	_____
Jacob Lund, M. S. (K. S. A. C.), Engineer.....	_____
C. Jeanette Perry, B. S. (K. S. A. C.), Executive Clerk.....	Cor. Tenth and Kearney
W. R. Lewis, Janitor.....	Corner Colorado and Fifth
Archie Huycke, Secretary to President.....	N. E. corner Main College Building
	Manhattan avenue and Kearney

THE INDUSTRIALIST.

VOL. 27.

MANHATTAN, KAN., OCTOBER 16, 1900.

No. 3

CONCERNING REFERENCE BOOKS IN THE COLLEGE LIBRARY.

KING GEORGE of England is credited with the remark that lawyers do not know so much more law than other people, but they know better where to find it. Such a statement can not be accepted as more than a half-truth, but that half-truth is a suggestion of importance to the student. The locative knowledge implied is the first essential equipment of the reader who would have the library serve him. Emphasis upon the importance of knowing how and where to find things in no way overlooks the more important knowledge of how to use the information when found—but, it must first be found.

All users of a library may be divided into two classes, those who know how to use reference books and those—the larger number—who do not. One person will spend an hour in fumbling catalogues or roaming about the alcoves of a library when all he is trying to find out is the date of the Gunpowder Plot. Another, on the same errand, will turn to the "Dictionary of English History," get the information and be gone in two minutes—a clear gain of fifty-eight minutes as the result of the knowledge of the reference material available for his purpose. This is only an illustration, but a similar loss and gain goes on constantly in every library, and the number of wasted hours is incalculable; it is, moreover, an unnecessary waste. The standard books of reference are not many, and any reader can readily familiarize himself with them.

Reference books proper are those books which give a wide range of information condensed into small compass, the most familiar example being the cyclopedia. Such works are not designed for the purposes of critical scholarship, and they must be taken for what they are worth. They are secondary sources of information. But for the purposes of hurried consultation, for the thousand-and-one queries arising daily, and for the acquirement of facts and dates they are adequate and authoritative. Most of the standard works of this class are to be found in our College library; those alone will be referred to which are to be found there.

They are of two classes, those that are universal in scope and those that are limited to the consideration of a subject or period.

Of the first, "Encyclopedia Britannica" has neither rival nor equal. It is the most scholarly work of its kind. Many of its articles are monographs rising to the level of original authorities. Its contributors are the most distinguished of the world's scholars, and its English is often of a quality to entitle it to rank as literature. But its long articles have crowded out many lesser, though important things, which are to be found in the briefer and newer publications of "Chamber's" and "Johnson's." "Chamber's" is a British publication now a little out-of-date. "Johnson's" has the advantage to Americans, at least, of being an American publication. It is, furthermore, more nearer up-to-date than the others. In fact, the nineteen hundred edition of Johnson's published by Appleton under the title of "Universal Cyclopedia" leaves little to be desired in the matter of current information. Its chief articles are signed, and the authorities appended to these, and in Britannica as well, are a most valuable feature of the work. Of this class are also such statistical annuals as the "Statesman's Year Book," and the various almanacs issued from newspaper offices, such as those of the *New York World* and *Tribune*.

The largest class of reference books is formed by cyclopedias of special subjects generally known as dictionaries. These, like the cyclopedias, have their contents arranged in alphabetical order, and are distinguished from them only by their restriction to a single department of knowledge.

First in order come the works which the name suggests—dictionaries of the language. "Webster's," or its revision the "International," the "Standard," and the "Century" with its supplemental "Cyclopedia of Names," are the foremost American publications of this nature.

Passing next to the dictionaries of literature, we find for the English authors the work of Allibone in three large volumes, with two supplemental volumes, which includes all British and American writers of any prominence, giving brief biographical notices and lists of their works. In case of the more important writers, original and selected criticisms are given. A smaller and convenient work of the same character is W. Davenport Adams' "Dictionary of English Literature." Works which give selections

from the writings as well as accounts of their authors are the Warner "Library of the World's Best Literature," Alden's "Cyclopedia of Universal Literature," Chamber's "Cyclopedia of English Literature," Duyckinck's "Cyclopedia of American Literature," and the great "Library of American Literature" edited by Stedman and Hutchinson. The best small works of this two-fold character are the two volumes of Francis H. Underwood, the one devoted to British and the other to American authors.

In the fine arts we have Gwilt's "Encyclopedia of Architecture" and Grove's "Dictionary of Music and Musicians." In the useful arts, Spon's "Dictionary of Engineering" and Gould's "Dictionary of Medicine." In science, an "Encyclopedia of Chemistry," Houston's "Dictionary of Electrical Terms," Paxton's "Botanical Dictionary," Crozier's "Dictionary of Botanical Terms."

In sociology we find Lalor's "Dictionary of Political Science" and Palgrave's "Dictionary of Political Economy." In history, three convenient works are Larned's "History for Ready Reference," Jameson's "Dictionary of American History," C. K. Adam's "Manual of Historical Literature." In chronology, Haydn's "Dictionary of Dates," Putnam's "World's Progress," Chamber's "Book of Days," and Hone's "Every-day Book." The last two are store-houses of out-of-the-way information in the departments of history and customs.

Lippincott's "Pronouncing Gazetteer," Rand and McNally's and the "Century" atlases, together with the nineteen volume edition of "The Earth and It's Inhabitants" published by Appleton and Company, cover the field of geography.

The various divisions of classical lore are presented for convenient reference in the great "Dictionary of Greek and Roman Antiquities," edited by William Smith, consisting of biography and mythology, geography and antiquities. An abridgement of the whole in one volume is Smith's "Classical Dictionary."

Theological topics and controversies may be found in Lyman Abbot's "Dictionary of Religious Knowledge" or in the "Cyclopedia of Biblical Literature".

Of the peculiar class of books known as dictionaries of quotation, the most important are Bartlett's for poetry, Hoyt and Ward's and Allibone's for both prose and poetry, Bohn's for classical quotations and for proverbs, and Weld's for sacred quotations. The student will also do well to bear in mind Wheeler's

"Who Wrote It," and his "Noted Names of Fiction," which is published in revised form in the supplement to the "International Dictionary;" and the various reference books by Brewer, especially his "Dictionary of Phrase and Fable," and his "Reader's Hand-book."

In studying synonyms, the reader may consult the lists in the principal dictionaries, or, more conveniently, Smith's "Synonyms Discriminated" and the works of Crabbe and Soule. Roget's "Thesaurus" is arranged by subjects, not alphabetically, and is intended to suggest the right word when it can not be recalled.

It is not my purpose to deal at this time with another class of library helps—catalogues and bibliographies, but there are two indexes of this class which must be mentioned—the "American Library Association Index to General Literature," and Poole's "Index to Periodical Literature" which unlocks the treasures of all important magazines and reviews in the English language.

I would urge every student to become acquainted with each and all of these authorities.

Adapted from Koopman's "Mastery of Books."

JOSEPHINE T. BERRY.

FACULTY STANDING COMMITTEES.

Names of committeemen.	Absence and discipline...	Assignments.	Athletics	Buildings and grounds	Catalogue ...	Examination.	Farmers' Institutes..	Industrialist.	Library	Museums	Postgradu- ates.....	Public exercises...
Ball			C									
Berry									M			
Brown												M
Cottrell					M		C			M		
Eyer			M							C	M	
Goodell												
Harper			M	C	M			M	M		M	
Hitchcock		M	M	M			M				C	
Howell		M										M
Lockwood					C			M	M			M
McFarland.....	M					C						C
Metcalf			M			M						
Popenoe		M		M			M		C	M		
Remick					M	M					M	
Rickman								C				
Sisson						M						
Stoner	M				M							
Walters		M		M								M
Weida	C					M		M		M	M	
Willard		C		M			M	M	M			
(Veterinarian)												
Harper (Miss)		M										
Rice		M										
Rupp						M						

C—chairman. M—member.

SOME FAMILIAR ECONOMIC PLANTS.

A *BIES* balsamea, Balsam Fir. Coniferæ. An evergreen tree of northern America whose juice yields Canada Balsam used in cementing lenses and mounting microscopic objects.

Acacia. Leguminosæ. Various kinds of gum, such as Gum Arabic, are produced from the exudations upon several species of the warmer parts of the Old World.

Acer saccharinum. Rock or Sugar Maple. Sapindaceæ. This and allied species, native in northern United States, yield sugar from the sap gathered in early spring.

Agaricus. Mushrooms. Hymenomycetes. Several species, as *A. campestris*, the common mushroom, are edible, being cooked as a vegetable.

Agave. Century Plants. Amaryllidaceæ. From *Agave Americana* and other species, is procured a juice which when fermented is called pulque and when distilled is called mescal. Native of Mexico.

Agrostis vulgaris. Red-top. Gramineæ. A forage grass considerably grown in the eastern states and suitable for wet meadows in eastern Kansas. A native of northern Europe and America.

Allium Cepa. Onion. Liliaceæ. A familiar garden vegetable cultivated in temperate regions for the bulbs. Probably a native of Persia. Some varieties produce bulblets in place of flowers. These bulblets or "tops" are used for propagation. If the seeds are sown thickly and the plants not thinned the bulbs are retarded in their development the first year. These small bulbs are known as onion-sets and are planted the following spring. *A. sativum* is the garden garlic, and *A. Porrum* is the leek. Both are natives of Europe.

Aloe. Liliaceæ. Aloes is the drug obtained from the dried juice of several species of *Aloe*, of East Indies and South Africa.

Amelanchier. June-berries. Rosaceæ. *A. Canadensis* var. *oblongifolia* is cultivated in the United States under the name of Dwarf June-berry. Native of N. E. United States.

Anacardium occidentale. Cashew. Anacardiaceæ. A tree of tropical America. The fruits called Cashew-nuts are edible when roasted.

Ananas sativus. Pineapple. Bromeliaceæ. A plant somewhat resembling the yucca and century plants, with a cluster of

numerous sharp-pointed leaves two to four feet long. In the center of the cluster is borne the fruit, one for each plant. Native of Brazil. Grown in tropical America, Bahamas, and South Florida, where they are usually known as "pines." In the latter region they are often grown under sheds. The whole field, sometimes many acres, is covered with a shed sufficiently high to allow of horse culture. The roof is made of three or four inch stuff with an equal space between them. The plants are shaded enough to protect them from the hot sun and drouth in the dry season, and also against frosts in winter.

Anona. Custard apples. Anonaceæ. Several tropical American species bear edible fruits. The only one cultivated in the United States to any extent is *A. squamosa*, the sugar apple. It is grown in extreme southern Florida. It is a tree about the size of an apple-tree. The fruit is green, as large as an orange, and with numerous protuberances. Other species grown for the fruit are *A. muricata* the sour-sop, *A. reticulata*, the custard-apple, and *A. Cheriomolia*, the cherimoyer. The taste of all is sweet and rather insipid, but is considered by many as delicious.

Apium graveolens. Umbelliferae. A low herb native in Europe. The bleached petioles are eaten raw or cooked. Variety *rapaceum*, the turnip-rooted celery, has the root enlarged and edible.

Arachis hypogæa. Peanut. Leguminosæ. A South American herb, cultivated in the warmer parts of America and extensively in Egypt. The part used is the fruit, a two or three seeded legume. The seeds are eaten as a confection or in some countries as a staple food. They also furnish peanut oil, extensively used in the arts. Large quantities of this oil are used in adulteration of or a substitute for olive oil. The flower is above ground, but the stalk to the fruit elongates and burys the pod.

Areca Catechu, Betel Palm. Palmæ. A palm of southern Asia, cultivated for the nuts. Pieces of the nut with a little lime are rolled in leaves of the Betel pepper and chewed by the natives of the East Indies as the Americans chew tobacco. The saliva is stained red. *Areca oleracea* is the cabbage palm of the West Indies. The large terminal bud is used as a vegetable.

Arnica montana. Compositæ. An herb of central Europe, a tincture of which is called arnica.

Artimisia. Wormwood. Compositæ. *A. Abrotanum*, Southernwood or "old man" is cultivated for ornament. *A. Absinthium* of

Europe is common wormwood. It possesses aromatic properties and is used in medicine. Absinthe, the French drink is made by distilling this with alcohol.

Artocarpus incisa. Bread-fruit. Urticaceæ. A moderate-sized tree extensively cultivated in the East Indies and South Sea Islands. The fruit is globose, about as large as a person's head and white within. The fruit is eaten cooked and tastes much like steamed bread. It is the staple food of the people of the region named and more or less throughout the tropics. *A. integrifolia* is the jack-fruit used for a similar purpose.

Asparagus officinale. Asparagus. Liliaceæ. Young shoots used as a vegetable. A native of Europe. Two climbing species are cultivated for the ornamental foliage which is used for decorations. *A. plumosa* with fine branches and branchlets forming a delicate spray, and *A. medeoloides*, the "Smilax" of florists.

Aster. Compositæ. Several species are cultivated for ornament. The China aster belongs to the genus *Callistephus*.

Astragalus. Leguminosæ. Gum Tragacanth is the gummy exudation from the bark of *A. gummifer* and some other species of Southwest Asia.

Atriplex. Chenopodiaceæ. *A. hortensis*, or Orach, is a vegetable similar to spinach. *A. semibaccata* and other species are being introduced into this country from Australia under the name of "Australian salt-bush," as forage plants in the arid regions.

Atropa Belladonna. Deadly nightshade. Solanaceæ. The drug belladonna, containing the active principle atropin, is an extract of the plant. It is a perennial herb, native of Europe. The name of the drug comes from the fact that it dilates the pupil of the eye, having been used for this purpose by ladies to beautify the expression.

Avena sativa. Oats. Gramineæ. A native of the "Old World" probably developed from the wild *A. fatua*. *A. nuda* is the naked oat, the grain being loose in the glumes.

Azalea. Ericaceæ. Ornamental shrubs with showy flowers.

Balsamodendron. Burseraceæ. Trees of southwestern Asia and north Africa which yields the gum resin known as myrrh.

Bambusa. Bamboos. Gramineæ. Tropical woody grasses, many of them of gigantic size. The bamboo can be put to a great variety of uses, such as the making of mats, sails, masts, water vessels, and for building purposes.

Begonia. Begoniaceæ. A large genus of herbaceous plants in tropical America, Asia, and South Africa, over one hundred species of which are in cultivation. The thousands of varieties are roughly classified into fibrous-rooted, semi-tuberous, tuberous, and rex or ornamental leaved sorts.

Bellis perennis. Garden Daisy. Compositæ.

Berberis. Barberries. Berberidaceæ. Ornamental shrubs. *B. vulgaris* the common barberry. A number of other species are cultivated.

Bertholletia excelsa. Brazil-nut. Myrtaceæ. A large tree of Brazil. The fruit is globose, about six inches in diameter with a hard shell enclosing about twenty seeds, the Brazil nuts of the candy stores.

Beta vulgaris. Beet. Chenopodiaceæ. Native of Europe. The fleshy root is used as a vegetable. The sugar beet is extensively cultivated in Europe and more or less in this country for the sugar in the juice. Mangle-wurzel is a large rooted variety, used for stock food. Swiss chard is a variety in which the leaves are used as a pot herb. Some varieties are cultivated for their ornamental foliage.

Betula. Birches. Cupuliferae. Birch bark comes from the canoe birch, *B. papyrifera*. Other species are cultivated for ornament.

Bixa Orellana. Arnotta tree. Bixineæ. A small tree of Central America. The thin pulp around the seeds furnishes the annatto dye of commerce, a fugitive yellow coloring matter which is used for coloring butter and other articles.

Brassica. Cruciferae. *B. oleracea*, the cabbage tribe, all of which are derived from a sea-coast plant of Europe, includes the cabbage, in which the fleshy leaves are used, the cauliflower and broccoli in which the inflorescence is used, kohl-rabi, in which the stem is fleshy, kale with spreading leaves used as a pot-herb, and brussels sprouts, with several small heads along the main stem. *B. Napus*, the rape, is used especially for forage. *B. campestris*, the ruta-baga or Swedish turnip, and *B. rapa*, the turnip, have fleshy roots. Mustard is obtained by grinding the seed of *B. nigra*.

Bromus. Brome grass. Gramineæ. *B. inermis* has received considerable notice of late, being recommended as a forage grass for arid regions. *B. secalinis* is the weed of grain fields known as chess or cheat. The belief was prevalent at one time that wheat would change to this grass.

THE INDUSTRIALIST.

Published weekly during College year for \$1 per annum; students and alumni, 50 cents.

KANSAS STATE AGRICULTURAL COLLEGE.

Manhattan, Kansas.

☆ ☆ ☆

PRES. E. R. NICHOLS..... Editor-in-Chief

PROF. J. D. WALTERS..... Local Editor

PROF. J. T. WILLARD..... Alumni Editor

BOARD OF REGENTS.

HON. E. T. FAIRCHILD, President.... Ellsworth

HON. J. S. McDOWELL, Vice-President,
Smith Center

HON. W. T. YOE, Treasurer..... Independence

HON. WM. HUNTER, Loan Comm'r, Blue Rapids

HON. MRS. SUSAN J. ST. JOHN..... Olathe

HON. CARL VROOMAN..... Parsons

HON. J. M. SATTERTHWAITE..... Douglass

PRES. E. R. NICHOLS, Sec. *ex-officio*.

LOCAL NOTES.

The mid-term examinations will be held on Saturday, November 3.

Mr. A. Jaedicke, of Hanover, visited the College last Friday and Saturday as the guest of Professor Walters.

Prospects are favorable for an excellent brass band this year. Twenty-one members are now enrolled in the organization.

Supt. Harriet Howell spent Sunday and Monday with her friends at Lawrence, as the guest of Professor and Mrs. Newson.

A. Jensen is again in charge of the Manhattan Creamery. Mr. T. G. Hanna, formerly the College herdsman, will be the foreman.

Rev. Thomas M. Rickman, of Des Moines, Iowa, is visiting his brother, Superintendent Rickman. He preached at the Baptist church Sunday, morning and evening.

The next public sale of the Manhattan Live Stock Association will take place on Saturday, October 20, at the sales arena. The indications for a large attendance are very favorable.

President Nichols was in Topeka Friday attending a meeting of the State Board of Education. The Board acted upon applications for Institute conductor and instructor certificates, State certificates, and life diplomas.

Dr. O. W. Baird, of Marquette, McPherson county, stopped off on his return trip from attending the Grand Lodge, I. O. O. F., held in Topeka last week, to visit with his son, a student, and to look over the grounds and buildings. He is a very pleasant gentleman.

The Farm Department has had calls the past week for an expert handler and judge of live stock, and for a good butter-maker, \$60 a month being offered for the latter. Both positions afford permanent work to the right man and both calls demanded Agricultural College men.

Rev. E. R. Rosenstein, of the Manhattan Christian church, addressed the students in chapel one morning of last week on "Some Don'ts." The address was somewhat funny and was highly appreciated by the audience. We hope the Reverend will favor us often with his helpful presence.

Doctor Sisson left on the Rock Island flyer Sunday morning to inspect some cattle which are for show and sale at the Kansas City Fat Stock Show, October 12. These cattle are the property of Mr. Louis Hathon, Carbondale. From there Doctor Sisson goes to the National Military Home to test the herd there with tuberculin.

To the uninitiated the prospects of an institute trip across the bounding plains of western Kansas or a little jaunt into the southeastern part of the State may seem a glittering prize. For five or six years thirty or forty institutes may be attended each year with the monotony scarcely realized. But to the veteran of ten to twenty years this pleasure becomes as the jewel that hangs on the end of the rainbow.

When lecturing before the county teachers' institute at Hutchinson, Professor Walters invited the teachers present to come to Manhattan to see the College and to bring along as many of their pupils as could be crowded into a double-headed special Rock Island train. The teachers intend to take the professor's advise. On October 20, if the weather is at all favorable, three hundred Reno county teachers and pupils will picnic on our beautiful campus. Another excursion will probably be organized this fall from Concordia and Clay Center.

The stereopticon exhibition given Monday night, October 8, by Dr. S. C. Orr, of Manhattan, under the auspices of the College Y. W. C. A., was a success in every way. The association cleared about \$50, though the tickets were sold at only ten and fifteen cents. Doctor Orr is an entertaining speaker and the views which he showed were the best we have seen. Many of the finest negatives exhibited are of his own make, especially those of the College campus and College buildings. The students showed by their frequent and enthusiastic applause that they appreciated the rich treat.

From a late issue of the *Students' Herald*, which contains a report of the business of the Students' Co-operative Association, we learn the following facts concerning their business of last year:

Purchases of books.....	\$1,507 20
“ “ groceries.....	7,085 23
“ “ uniforms.....	4,704 50
“ “ incidentals.....	54 23
Total purchases.....	\$13,351 16

The sum of \$600 was paid for labor. The association will doubtless do a larger business this year.

W. E. Martin, secretary of agriculture for Victoria, Australia, has written to the Kansas Board of Agriculture for information and particulars of certain systems of soil culture "originated and practiced in Kansas," which he says "will no doubt be useful in the western area of this colony." Kansas agricultural methods and literature seem all the time to interest the Australians greatly. It will be remembered that the government of Queensland imported

and kept Prof. E. M. Shelton, of the Kansas State Agricultural College, as agricultural adviser for about nine years, and finally gave him funds and authority for establishing an agricultural college, which is now in successful operation at Gatton, in that colony.

The Kansas State Agricultural College has held over one hundred farmers' institutes during the past summer. These summer institutes have been unusually successful. The attendance has averaged five hundred and thirty per institute. The College force will be ready November 1 to take up the winter's work in farmers' institutes and has the funds for holding one hundred meetings. The College sends two speakers to each institute, paying all their expenses, and also prints the programs and posters for institutes without charge. The farmers holding the institute put up the posters, push the advertising, furnish a hall for holding the meeting and present papers and addresses for half the program. It will pay you to hold an institute in your community. For full information in regard to working up a good meeting, address Farmers' Institutes, Agricultural College, Manhattan, Kansas.

Professor C. E. Goodell, A. M., recently elected to the chair of History and Economics of this College, is a native of Illinois. He received his high-school training in Mankato, Minn. In '85 he entered Franklin College, Indiana, and by extra work took the degree of A. B. in '88. After spending one year in graduate work at Franklin he was made instructor in modern languages. In the fall of '90 he entered Cornell University, N. Y., as a graduate student and instructor in political science, remaining nearly two years. He then accepted the principalship of the high school of Mankato. In '94, he was called to the chair of history in Franklin College. In '98, having obtained leave of absence for one year, he resumed his graduate work in Chicago University, spending also a part of the past year there. During 1898-1900 he held a fellowship in political science in that institution. The chair of history and political science of a state institution is a difficult one to fill, but we are certain that Professor Goodell will bring into his work that spirit of scientific investigation and truth which forces respect from all fair-minded citizens.

ALUMNI AND FORMER STUDENTS.

Invitations are out for the wedding of W. L. Hall, '98, and Gertrude Lyman, '97, at the Baptist church, October 24, at eight o'clock P. M.

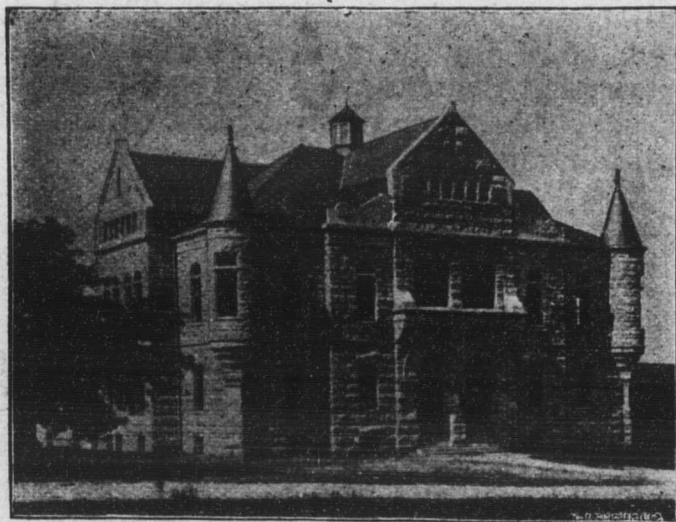
Miss Edith Lantz, '96, and Mr. R. K. Farrar, '96, were each granted State certificates at the recent meeting of the State Board of Education. They successfully passed the August examination in the professional branches.

H. D. Orr, '99, has been awarded a scholarship in the Medical College of Northwestern University, on account of his excellent record here. He enters as an irregular second-year student, and expects to graduate in three years and one term's time.

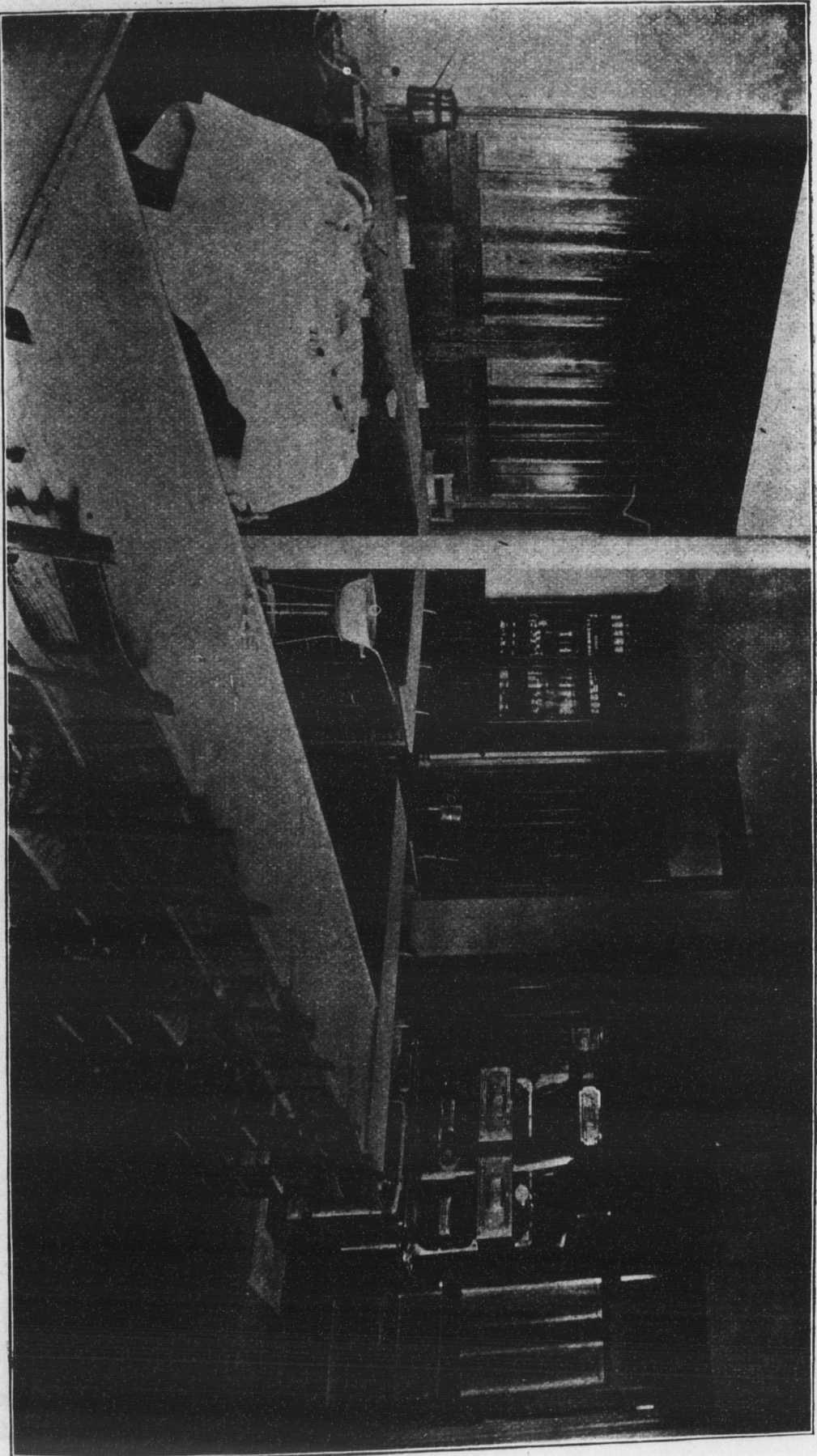
Announcements of the marriage of Mr. O. H. Halstead and Miss Estelle J. Gadol, of St. Joseph, Mo., on Tuesday, October 9, have been received. Mr. Halstead is a former Leonardville boy and a member of the class of 1895. He is now employed in the mercantile business in St. Joseph.—*Nationalist*.

Miss Lucy Waters ['94], a Geary county young woman who has been preparing herself for school work, is now principal of the Livermore, Cal., school at \$100 a month. Miss Waters was graduated at the State Agricultural College, taught several years, and two years ago went to Leland Stanford University.—*Mail and Breeze*.

Albert Todd, '72, well remembered by some of us as the professor of military science, 1881 to 1884, and now captain in the Sixth Artillery stationed at Manila, writes to President Nichols in a very complimentary way of the College of the present, and sends his kindest regards to all of his old friends still here and a hearty wish for the health and prosperity of all of them. The following may be quoted: "As I look over the catalogue and compare it with the first one, now over a generation old, the growth seems marvelous, and I can scarcely realize that it is the same institution. I believe that mine is one of the few names that is entitled to a place in all the catalogues of the College from 1863 to date.... I feel that the College has been a great force in the State of Kansas and one that will but increase with the coming years."



AGRICULTURAL HALL.



KITCHEN LABORATORY, DOMESTIC SCIENCE DEPARTMENT.

KANSAS STATE AGRICULTURAL COLLEGE

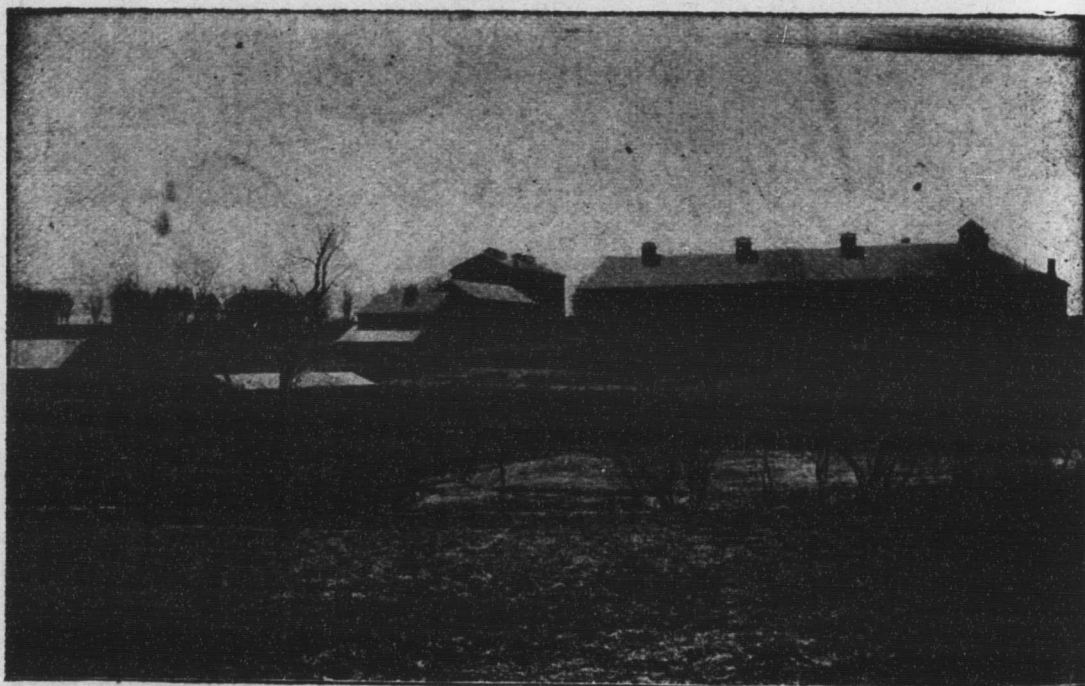
FIVE COURSES OF STUDY.....

Each complete in itself and leading to the degree of Bachelor of Science. are as follows:

- 1—General Science
- 2—Agriculture
- 3—Domestic Science
- 4—Mechanical Engineering
- 5—Electrical Engineering

This Institution

is supported by the General Government and by the State of Kansas, and is designed, by its instruction, to promote the liberal and practical education of the industrial classes in the several pursuits of life.



COLLEGE classes are open to both sexes. Tuition is free in all departments. There is no charge for laboratory supplies. Room and board can be had at very reasonable rates. The yearly expenses, exclusive of clothes and traveling expenses, are between \$100 and \$200. All College laboratories, shops and class rooms are well supplied with needful apparatus and appliances. Practical application is made of the principles learned in the study of the sciences, and thus the College is made a school of applied science.

Domestic Science.

A full course in Domestic Science now in successful operation. The work in the Department of Domestic Science forms an interesting part of the instruction given in the women's course. It is of great practical and disciplinary value.

FOUR SHORT COURSES

Open to students of mature age who cannot, on account of time or money, take one of the four-year courses.

- 1—Apprentice
- 2—Domestic Science
- 3—Dairying
- 4—Agricultural

For catalogue or other information, address

**ERNEST R. NICHOLS, A. M., PRES.,
MANHATTAN, KANSAS.**

(Cut represents Farm Barn.)

Volume 27.

Number 4.

THE INDUSTRIALIST

ISSUED WEEKLY

KANSAS STATE
AGRICULTURAL COLLEGE

☆ ☆ ☆

Editor-in-Chief,

Pres. E. R. Nichols

Local Editor,

Prof. J. D. Walters

Alumni and Former Students,

Prof. J. T. Willard

☆ ☆ ☆

Published by
PRINTING DEPARTMENT
J. D. Rickman, Supt.

BOARD OF INSTRUCTION.

ERNEST R. NICHOLS, A. M. (University of Iowa), President.....	512 Houston street
JOHN D. WALTERS, M. S. (Kansas State Agricultural College).....	North end of Sixth street
Professor of Industrial Art and Designing.	
ALEXANDER B. BROWN, (Boston Music School), A. M. (Olivet).....	817 Houston street
Professor of Music.	
JULIUS T. WILLARD, M. S. (Kansas State Agricultural College).....	1211 Moro street
Professor of Applied Chemistry.	
ALBERT S. HITCHCOCK, M. S. (Iowa Agricultural College).....	College Hill, 2 miles N. W. of College
Professor of Botany.	
FREDRIC A. METCALF, O. M. Superioris Honoris (Emerson Coll. Oratory) 6th and Poyntz ave.	
Professor of Oratory.	
GEORGE F. WEIDA, Ph. D. (Johns Hopkins).....	517 Fremont street
Professor of Pure Chemistry.	
HENRY M. COTTRELL, M. S. (Kansas State Agricultural College).....	College Campus
Professor of Agriculture, Superintendent of Farm.	
MISS MINNIE A. V. NELLIE STONER, (Boston N. S. of H. A.), B. S. (S. D. A. C.)	Fourth and Osage
Professor of Domestic Science, Dean of Women's Department.	
JOSEPH D. HARPER, M. S. (Rose Polytechnic Institute) Houston st., between 6th. and 7th. streets	
Professor of Mechanical Engineering, Superintendent of Shops.	
EDWIN A. POPENOE, A. M. (Washburn).....	Seventh and Osage streets
Professor of Horticulture and Entomology, Superintendent of Orchards and Gardens.	
FRANK C. LOCKWOOD, Ph. D. (Northwestern).....	Corner Fifth and Humboldt
Professor of English.	
BENJ. L. REMICK, Ph. M. (Cornell College).....	Fourth and Osage
Professor of Mathematics.	
BENJ. F. EYER.....	_____
Professor of Physics and Electrical Engineering.	
C. E. GOODELL, A. M. (Franklin).....	_____
Professor of History and Economics.	
MISS HARRIET HOWELL, (Pratt Institute).....	1211 Moro street
Superintendent of Domestic Art.	
JOSHUA D. RICKMAN, I. T. U.....	911 Osage street
Superintendent of Printing.	
MISS JOSEPHINE T. BERRY, A. B. (Kansas University).....	Sixth street and Poyntz avenue
Librarian.	
B. S. MCFARLAND, A. M. (Miami).....	Fourth and Osage
Principal Preparatory Department.	
MISS FLORENCE BALL.....	N. E. Cor. Juliette and Fremont streets
Director of Physical Training.	
MISS LORENA E. CLEMONS, B. S. (K. S. A. C.), Secretary.....	Corner Fourth and Laramie
SEPTIMUS Sisson, S. B. (Chicago), V. S. (Toronto).....	Cor. Manhattan avenue and Moro
Associate Professor of Veterinary Science and Biology.	
D. H. OTIS, M. S. (Kansas State Agricultural College).....	College Hill
Assistant Professor of Dairying.	
W. A. MCKEEVER, A. M. (Kansas University).....	_____
Assistant Professor of English and Philosophy.	
MISS JOSEPHINE C. HARPER, Instructor in Mathematics.....	Corner Sixth and Pierre streets
MISS ALICE RUPP, (Indiana State Normal), Instructor in English.....	_____
CHARLES EASTMAN, Cadet Major and Acting Commandant.....	_____
William L. House, Foreman of Carpenter Shop.....	Corner Sixth and Colorado
Chas. W. Pape, M. S. (K. S. A. C.), Ass't in Zoölogy and Ass't Curator Museum.....	1104 Moro
R. W. Clothier, M. S. (K. S. A. C.), Assistant in Chemistry. Fremont, between Fifth and Sixth	
Margaret J. Minis, Assistant Librarian.....	Fourth and Moro streets
R. H. Brown, M. T. (Kan. Con. of Music), B. S. (K. S. A. C.), Ass't in Music. 817 Houston street	
J. M. Westgate, M. S. (K. S. A. C.), Assistant in Botany, Cor. Manhattan avenue and Vattier	
May Secrest, B. S. (K. S. A. C.), Assistant in Domestic Art, Cor. Leavenworth and Seventh	
Wm. Anderson, B. S. (K. S. A. C.), Assistant in Mathematics. Cor. Humboldt and Juliette ave	
Gertrude Barnes, Assistant Librarian.....	Cor. 9th and Moro
Albert Dickens, B. S. (K. S. A. C.), Assistant in Horticulture, Fremont and Manhattan avenue	
William Baxter, Foreman of Greenhouses.....	_____
J. G. Haney, B. S. (K. S. A. C.), Ass't in Feeding and Field Experiments, Manhattan ave and Kearney	
Mary Pritner, B. S. (K. S. A. C.), Assistant in Domestic Science.....	Cor. 7th and Leavenworth
Theodore Lindquist, M. S. (Northwestern), Ass't Physics.....	Cor. Fifth and Humboldt
W. M. Sawdon, B. S. (Purdue), Assistant in Mechanics.....	Juliette and Houston
O. I. Purdy, B. S. (K. S. A. C.), Assistant in Printing.....	1216 Fremont street
Ada Rice, B. S. (K. S. A. C.), Assistant in Preparatory Department.....	Osage and 8th. street
Louis Wabnitz, Foreman Iron Shops.....	5th and Osage
Henry Van Leeuwen, Instructor in Cheese Making (U. W. D. S.)....	Manhattan and Kearney
E. W. Curtis, Instructor in Butter Making.....	_____
Florence L. Grant (Mass. Normal Art School), Assistant in Drawing....	Fourth and Osage
A. T. Kinsley, B. S. (K. S. A. C.), Assistant Veterinary Department.....	_____
Elizabeth Agnew, B. S. (K. S. A. C.), Assistant in Domestic Science.....	_____
Jacob Lund, M. S. (K. S. A. C.), Engineer.....	Cor. Tenth and Kearney
C. Jeanette Perry, B. S. (K. S. A. C.), Executive Clerk.....	Corner Colorado and Fifth
W. R. Lewis, Janitor.....	N. E. corner Main College Building
Archie Huycke, Secretary to President.....	Manhattan avenue and Kearney

THE INDUSTRIALIST.

VOL. 27.

MANHATTAN, KAN., OCTOBER 23, 1900.

No. 4

ON THE USE OF CONDIMENTAL STOCK FEEDS.

DURING the last feeding season thousands of dollars were spent in the purchase of various brands of condimental feeds which were alleged to enable the stock fed with them in small quantity per day, in addition to the ordinary ration, to put on flesh much more economically than those not so fed. They were also recommended for milch cows and animals kept for breeding. Undoubtedly the coming winter will see a renewal of effort on the part of the manufacturers of these feeds to place large orders for them. Whether an investment of this kind is likely to prove profitable or not is the question that will be up for decision by many men within the next three months. Several of these feeds have been sent to the Experiment Station for analysis, and a candid consideration of certain aspects of the problem involved seems pertinent.

One thing may be stated in advance, namely, that the Experiment Station is unable to analyze these products in such a way as to tell each and every thing that has been put into them. As far as observed they seem to consist of some concentrated feed like oil meal, to which has been added a greater or less number of drugs or medicinal chemicals. Common salt is also present in some of them at least. Some makers claim that over a dozen distinct ingredients are included in their preparations. Anyone at all conversant with the chemist's art will see that it would be entirely impossible to analyze such a mixture in such a way as to state the nature and amount of each of these ingredients. If these feeds be analyzed in the same manner as other feeds, that is, with a view to a determination of their nutritive value, they are found to be somewhat inferior to the ordinary high concentrates of the market. This fact is in marked contrast with the claim of the manufacturers that these feeds are equal in value to fourteen or sixteen times as much other food. The effort of the manufacturers seems to be to give the impression that the efficacy of their

goods is due to their extremely nutritive character. As a matter of fact, any special value which they may possess must be due to the drugs which they contain, and the feeder is brought face to face at once with the question of the advisability of mixing medicine with the daily food of a healthy animal. The writer is not capable of giving a professional judgment on this point, but it seems to commend itself to the ordinary sense of mankind as an unwise proceeding for either man or beast.

There is, however, one aspect of the question which may serve to modify one's opinion on this question, at least to such an extent as to leave the question open along certain lines. Stock is kept for several purposes, such as labor, breeding, milk production, and slaughter for food. Is it not possible that the use of an artificial stimulant to appetite, digestion and assimilation may be justifiable or wise when the object of the feeding is the production of an animal for slaughter, when it would not be if the animal were kept for any other purpose? The ordinary fattening process is itself an unnatural one for the animal, and one which unfits it for most other purposes. Some feeds used cannot be fed indefinitely without impairing the health of the animal. Cottonseed meal cannot be fed to swine with safety at all, nor to cattle except for a limited period. If it be allowed that a staple feed may be used, even if it does produce a diseased condition to a certain extent, may this license be extended to the use of drugs which may in time also produce a diseased condition, provided the animal is slaughtered before this condition has become pronounced?

Though an affirmative answer to the last question may possibly be given, the conditions would seem to be quite different in the case of animals kept for breeding, driving, draught, milk, wool, or in short, any purpose requiring the continuance of the animal's life for an extended period. In these cases conditions are necessary that can be maintained for years, and the continuous use of such artificial stimuli must certainly be of very questionable wisdom.

Even though it should be conceded that hygienic considerations in relation to the animal fed, and the people who later feed upon the animal, may permit a system of fattening that is unnatural and probably to a certain degree unhealthful, the financial results may still be regarded as unsettled. If any tests have been made that are conclusive they have not come to the notice of the writer.

Some who have used condimental feeds have observed no benefit; others think that they have. In judging from the experiences of others it is well to bear in mind that each of us prefers to regard his efforts as successful, and that nearly all who use the condimentals will be glad to have their investment turn out well, and will look with a somewhat partial eye at the problem. A settlement of the question can be made only by an impartial experiment under conditions that will lead to reliable results.

To properly test this a considerable number of cattle should be separated into two lots, as nearly alike in all respects as possible. The weight of each lot being ascertained, they should then be fed upon precisely the same ration as to kind, but each lot permitted to eat as much as appetite dictates, an accurate record being kept of the feed consumed. To one of these lots let the regular allowance recommended of some condimental feed be added to the ration, while the other is left without this. Let this continue for a month, say, with weekly weighings if convenient, but with a weighing at the end of that time at least. At the end of the month let the condimentals be withdrawn from the one lot and given to the other, and the feeding continued for another month. Weigh again at the end of this month, and feed condimentals to the first lot for the next month, and not the second. Finally, after another weighing, feed the condimentals to the second lot for another month, and withhold them from the first. Then give a last weighing. In this way effects due to change of weather would be offset, since one lot would be getting condimentals all of the time and one lot would not. The effect of unavoidable differences in the two lots would be in the main offset by the fact that each would receive condimentals one-half of the time and be without them the other half. Weekly weighings might enable one to draw a more accurate conclusion, but by a comparison of the monthly gains as shown by the monthly weighings a reliable result could doubtless be arrived at. If the total gains of both lots during the periods when they were receiving condimentals was materially different from the total gains of the same lots when they were not receiving them, the difference might fairly be attributed to the condimentals. A rigid comparison would require that an allowance be made for the ordinary food value of the condimental feed given, since that would be that much more than those not receiving it were fed.

If such a test showed that the cattle had made the greatest

gain during the periods when they were receiving condimental feed, the case might seem to be established in favor of condimentals, if the health of the animals was not noticeably impaired. It would yet remain to be seen whether or not these gains had been made economically, that is, with a consumption of less of the regular feed per pound of gain. The manufacturers of these goods claim that such will be the case. "As a producer of flesh it is beyond comprehension. It will save one-fourth of the grain ordinarily used. It will fit your animals for the market in three-fourths of the time," is the claim of one recently brought to our notice.

As previously stated, such statements as this cannot be justified by any consideration of the simple food value of these preparations. If possessing any truth it must be found in the medicinal effect of the drugs contained in them. If we consider this point candidly we see that there is a possibility of at least partial truth in the statement.

All animals require a certain amount of food merely for maintenance, whether they are doing any work or making any growth or not. The longer an animal must be kept, therefore, the greater the amount of food it will require for this purpose. If by any means it can be caused to put on its flesh more rapidly, the total amount required for a given gain will be decreased. This is one of the sources of profit in liberal feeding. Manufacturers of condimental feeds claim that they enable the animal to digest its feed better; that is, to get more out of a given weight. At least one professes to provide diastase, a substance which acts upon the starch of foods in a way similar to the action of the digestive fluids. That some slight digestive effect might be obtained in this way is quite probable, but that it would not have been accomplished by the digestive apparatus of a healthy animal equally as well alone may well be doubted. Diastase has no power of digestion not possessed by the digestive fluids, if they have time and are brought in contact with the food properly. In the feed referred to the amount of diastase was so small as to be almost of no account, and if one wishes to experiment in this line it could be done at an expense not one-thousandth as great by purchasing malt instead of this feed. Malt is prepared by sprouting barley by moistening it and spreading it out on a floor. When the sprouts are about three-fourths as long as the grain, the growth is stopped

by drying and heating the grain in a kiln. This constitutes malt from which malt liquors are made. In the sprouting process a part of the nitrogenous constituents of the grain are converted into diastase, a substance which has the power of converting starch into sugar. If any one wishes to use an agent of this kind the economical thing to do is to purchase malt at some brewery. This could undoubtedly be obtained at a much lower price than that asked for condimental feeds, and it would be hundreds of times as effective in diastatic power. It is the opinion of the writer, however, that its use in feed would not be found of any special value.

Even if the condimental feed does not enable the animal receiving it to digest a greater percentage of the feed consumed, if it enables him to consume a larger amount per day, and digest it equally well, it would be advantageous to use it, if furnished at a reasonable price, and its use is not attended by any noticeable bad effects. The source of the advantage would be in the saving of the maintenance element of the ration that would be required for a longer feeding period. If these preparations possess any special value, the chief, if not the only benefit, will be found to lie in this one consideration. This is moreover no small consideration, but until accurate, impartial investigation shall have shown that the use of these feeds actually results in such a saving in the length of the feeding period, it will be the part of wisdom for all cautious feeders to go lightly in investments of this kind, and of cautious thinkers to maintain a receptive and non-committal attitude.

J. T. WILLARD.

Farmers' institute work for the week ending October 13 was as follows:

Date.	Place.	Speakers.	Attendance.
October 9.	Bridgeport	Haney	100
" 10.....	Carlton.....	Haney	60
" 11.....	Eureka	Cottrell.....	30
" 11.....	Kipp.....	Haney	50
" 12.....	Altamont.....	Otis and Dickens	300
" 12.....	Rhinehart.....	Haney	50
" 13.....	Fulton.....	Otis and Dickens	1000

Political excitement seriously interfered with the attendance at some of these meetings and no more institutes will be held until after election.

FALL-TERM PROGRAM, SHOWING INSTRUCTOR,

INSTRUCTOR.	First Hour, (9:05 to 9:50)	Second Hour, (9:55 to 10:40)	Third Hour, (10:45 to 11:30)	Fourth Hour, (11:35 to 12:20)
Walters.....	Proj. Draw....24	Proj. Draw....18	Proj. Draw....13	Des. Geom.....12
Grant.....	F. H. Draw....29		Geom. Draw....29	Obj. Drawing, 18 }
Brown.....	Singing, Not'n, Band, Orchestra,	Singing, Not'n, Band, Orchestra,	Singing, Not'n, Band, Orchestra,	Singing, Not'n, Band, Orchestra,
Brown, R. H.....	Organ and Orche	stral Instruments,	8 lessons daily...	
Hutto.....	Piano and Organ.	5 lessons daily		
Willard ¹	Ag. Chem.....14	D. S. Chem....15		
Weida ⁶			Chemistry....52	Chemistry.....47
Clothier ¹			Chem. F & S....26	Chem. F & S....23
Hitchcock ¹	Botany.....4	El. Botany....58		El. Botany.....61
Westgate ¹	El. Botany....57			
Metcalf ²	Oratory I.....20	Oratory IV....42	Oratory I.....30	Oratory III....14
Cottrell ¹	Farmers' Institut	es.....		
Otis ¹	Farmers' Institut	es.....		
Haney ¹	Farmers' Institut	es.....		
Stoner ³	Chem. Cook....19	D. S. Short Course, 2d....15	D. S. Short Course, 2d....15	
Pritner.....				
Agnew.....	General Ass't....	General Ass't....	General Ass't....	General Ass't....
Wilder.....				
Harper.....		Mech. Mat....10	Eng. Design....10	
Sawdon.....	Lecture.....	Lectures, W....41	Lectures, F....46	Lecture, F....41
House.....	Wood-work....42	Wood-work....41	Wood-work....46	Wood-work....41
Wabnitz.....	Apprentices....9	Apprentices....9	Apprentices....9	Apprentices....9
Gasser.....	Apprentices....10	Apprentices....10	Apprentices....10	Apprentices....10
Lund.....	Boiler & Eng....5	Boiler & Eng....5	Boiler & Eng....5	Boiler & Eng....5
Popenoe ¹	Horticulture....19	Horticulture....27	Horticulture....25	Entomology....2
Dickens ¹				
Norton ¹				
Lockwood.....	Themes.....37	Themes....46	Rhetoric.....45	Rhetoric.....27
McKeever.....	German.....20	Eng. Read. I....40	Eng. Read. I....37	Composition....40
Rupp.....	Eng. Read. II....40	Composition....46	Composition....46	Eng. Read. II....26
Remick.....	Anal. Geom....14	Geometry I....27	Geometry I....21	Algebra III....38
Harper.....	Geometry II....22	Geometry II....32	Algebra I....34	Algebra II....41
Anderson.....	Algebra I....43	Algebra III....24	Algebra II....47	Geometry I....21
Eyer.....	Physics.....10		Physics.....35	Physics.....30
Lindquist.....	El. Physics....41	El. Physics....45		D. S. Physics....15
Goodell.....	Gen. History....21	Gen. History....23	Ind. History....31	Ind. History....37
Sisson ⁴	Anatomy.....9	Zoology.....18	Zoology....14	Hygiene, F. A....14
Kinsley ¹	Bacteriology....25	Bacteriology....12		
Pape.....	Physiology....15		Physiology....34	Physiology....28
Howell.....			Sewing II....12	Sew. III & IV, 16
Secrest.....	Sewing I....18		Sewing I....22	Sewing I....16
Jones.....	Sewing I....16	S. C. Sewing...31	S. C. Sewing...31	S. C. Sewing...31
Paddock.....		S. C. Sewing...31	S. C. Sewing...31	S. C. Sewing...31
Rickman.....	Printing.....5	Printing.....6	Printing.....6	Printing.....11
Purdy.....	Apprentices....2	Apprentices....2	Apprentices....2	Apprentices....2
McFarland.....	Printing.....	Printing.....	Printing.....	Printing.....
Rice.....	Bookkeeping....59	Bookkeeping....61	Arithmetic B....41	Arithmetic A, 39
Holroyd.....	Grammar B....43	Composition....45	History.....33	Geography....64
Manley.....	Grammar B....33	Grammar A....33	Arithmetic B....32	Grammar A....16
Nichols.....	Algebra I....34	U. S. History...55		
Mather.....	Arithmetic A....36		Algebra I....41	Algebra I....41
Ball ⁵	Calisthenics....6		Calisthenics....8	Calisthenics....11

¹ Experiment Station work.² Rehearsals for Saturday P. M. chapel.³ Hygiene lectures Saturdays before chapel.⁴ Hygiene lectures Tuesdays before chapel.⁵ Calisthenics before chapel.⁶ Special chemistry before chapel.

SUBJECTS, AND NUMBER IN CLASS.

Fifth Hour, (1:30 to 2:30)	Sixth Hour, (2:35 to 3:35)	Seventh Hour, (3:50 to 4:50)	Eighth Hour, (4:55 to 5:55)
Geom. Drawing, T...44 Obj. Draw. F 30; F.H. Draw. T 71, W 69, T 76, Singing, Notation, Band, Orchestra.....	Geom. Drawing, T...44 Obj. Draw. F 30; F.H. Draw. T 71, W 69, T 76 Singing, Notation, Band, Orchestra.....	Singing, Notation, Band, Orchestra...	Singing, Notation, Band, Orchestra,
Anal. Chemistry.....18 Laboratory.....25	Anal. Chemistry.....18 Laboratory.....25		
Dom. Sci. I. T & T...20 Thera. Cook. W & F, 18 Dom. Sci. Short Course, 1st.....31 General Assistant..... Short Course Ass't..... Eng. Lab., T & T...8 Appren. Draw. W...9 Eng. Lab. T & T...8 Wood-work.....17 Mac. S. T T, 14; W F 19 Bl'ck. S. W F 20; T T 21 Found. W F 13; T T 15	Dom. Sci. I. T & T...20 Thera. Cook. W & F, 18 Dom. Sci. Short Course, 1st.....31 General Assistant..... Short Course Ass't..... Eng. Lab. T & T...8 Appren. Draw. W...9 Eng. Lab. T & T...8 Wood-work.....17 Mac. S. T T, 14; W F, 19 Bl'ck. S. W F 20; T T 21 Found. W F 13; T T 15	Dom. Sci. I. T & T, 20 Thera. Cook. W F, 18 Dom. Sci. Short Course, 1st.....31 General Assistant... Short Course Ass't.. Strength Mat. F...12 Mac. S. T T 6; W F 3 Bl'ck. S. T T 5; W F 17 Found. T T 12; W F 9 D. S. Veg. Gard. F 31	Dom. Sci. Short Course, 1st.....31 General Assistant. Short Course Ass't. Strength Mat. F...12 Mac. S. T T 6; W F 3 Bl'ck. S. T T 12; W F 17 Found. T T 12; W F 9 D. S. Veg. F.....31
Floriculture.....6 Hort. Industrial.....	Floriculture.....6 Hort. Industrial.....	D. S. Veg. Gard. F 31	D. S. Veg. F.....31
Laboratory, T 8; F 9 Laboratory, 3 days, 10 Dressmaking.....15 Sewing III, T & T...9	Laboratory, T 8; F 9 Laboratory, 3 days, 10 Dressmaking.....15 Sewing III, T & T...9	Lab. ....W 9; Th. 11 Dressmaking.....15	Lab. ....W 9; T 11
Printing, Tu., Th....10 Apprentices.....2 Printing.....	Printing, Tu., Th....10 Apprentices.....2 Printing.....	Apprentices.....2 Printing.....	Apprentice.....2 Printing.....
Writing & Spelling..17			
Calisthenics.....28		Calisthenics.....20	

THE N. E. A. MEETING AT CHARLESTON.

LAST summer between two and three thousand teachers made a southern trip, as the National Educational Association held its annual meeting from July 10 to 14 in Charleston, "the city by the sea." The attendance was not as large as at some of the recent meetings, but was not by any means the lowest in the history of the association. Mr. Dyer, of the Wichita city schools, was joined at the Charleston Hotel by Superintendent Davidson, of the Topeka city schools, and opened "Kansas headquarters." Although they hardly thought it worth while to start a register of Kansas visitors, they were surprised to find twenty or more Kansans before the end of the meeting.

The trip going to the meeting was quite as interesting as Charleston itself to a northern man, especially to such a one as I, who had never been used to any region further south than Virginia. The pleasure of the trip was very much increased by the liberal stop-over privileges granted by the railroads. After spending several days in St. Louis and vicinity (including a visit to the little college town where I worked from 1894-'96), I started on the evening of Thursday, July 5, for Louisville, Ky., arriving there on Friday morning. Here I joined the "Chicago Teachers' Club," to whose courtesy I owe a good deal of the pleasure of the trip. Although the idea of keeping a special train all the way was impracticable on account of numerous stop-overs, we found the large party helpful in many ways.

Our first stop-over after leaving Louisville was at the Mammoth Cave of Kentucky. Here we spent Friday afternoon very pleasantly making the "short trip" and getting real ideas of darkness and cold, as well as of stalactites and stalagmites. We arrived in Nashville late at night and had only a brief trip in the sleeper before we were summoned to "do" Chattanooga and vicinity. Arriving at Chattanooga on Saturday morning we spent the forenoon in a drive about the points of historic interest about the city, to Missionary Ridge and to Chickamauga, returning to the city by the foot of Lookout Mountain.

Although our schedule called for us to leave Chattanooga soon after dinner, Lookout Mountain seemed irresistible and many of us ascended the inclined plane and spent the whole afternoon enjoying the look-out over the valley of the Tennessee, especially

Mocassin Bend, and refreshing our minds on the events of the civil war.

Leaving Chattanooga early on Sunday morning we reached Atlanta in time to attend the mid-day service at St. Phillips pro-cathedral; and later in the day I had the pleasure of meeting the Bishop of Georgia, whom I had known formerly, as rector of the Church of Nativity, at South Bethlehem, Pa. Our party did not follow Sherman's path "from Atlanta to the sea," but instead went by the way of Savannah, which we found to be a typical southern city and an important shipping point. We felt well repaid for a visit to the cotton exchange and the cotton wharves.

As I have said, all these experiences of the trip were no less interesting than Charleston itself; but I must resist the temptation to speak further of travel, and state that we reached Charleston Monday afternoon, July 9, in a special train from Savannah. I found it difficult to obtain a suitable room and board in spite of the proverbial hospitality of the people—for they had been instructed to look for a very large crowd and were told to put several beds in a room and crowd four or six people to one room.

The meetings began on Tuesday, July 10, and continued until Friday, July 13. The general sessions were held in the large auditorium recently erected by the city from a bequest made for the purpose. These general sessions occupied the morning and evening, the afternoon being left free for departmental or section meetings. Among the most interesting events of the general sessions were the opening addresses of welcome by several typical Southern gentlemen—men in public life—and the climax was reached when "Dixie" was called for by a Northern visitor and the Southerner responded by calling for "Yankee doodle." To me, such evidences of a unification of national feeling and evidence of general good will was very gratifying. Another of the public meetings that is worthy of mention was the one Wednesday evening, where Booker Washington, of Tuskegee, discussed the race problem in general and then stated his well-known educational plans for the negro race. He was very kindly received by the large audience and attentively listened to. The daily papers and many typical white people of the South seem to regard him as the hope of his race.

To show the diversity of interests in the separate afternoon meetings, I shall mention the names of the separate departments:

Kindergarten Education, Elementary Education, Secondary Education, Higher Education (college presidents), Normal Schools, Manual Training, Art Education, Music Education, Business Education, Child Study, Physical Education, Science Instruction, School Administration, Library Work, Education for Deaf, Blind and Feeble-minded.

In regard to these meetings of sections, I hope later to give some account of the interesting discussions in the section for science instruction, which met at Charleston College on Thursday afternoon. This meeting was very helpful; and yet the large number of other sections and the apparent fewness of the science teachers taught us not to think of our own little part of the educational work "more highly than we ought to think." In fact, a good deal of the helpfulness of these national meetings comes from the very variety of interests represented, and it is good to realize that all of these are working in the interests of education. Another helpful feature is that of getting into so different an environment and being able to see something of the life and customs of different regions of the country.

In regard to seeing the city of Charleston itself, I shall not be able to say much here except that the city is very delightful, having one of the best harbors on the Atlantic coast. Even in July, we had a delightful sea-breeze. In seeing the city, I was fortunate in having as my constant companion a classmate from Johns Hopkins, who was born and reared at Charleston within sight of Fort Sumter and Fort Moultrie. The place for the next meeting has not yet been decided, but a vigorous campaign was carried on at Charleston by the delegations from Cincinnati and from Detroit in behalf of their respective cities. GEORGE F. WEIDA.

The Blue Valley Creamery Company has the following to say about one of our last year Dairy School boys: "Mr. Fred Schaaf is a splendid good fellow and we have tried to keep him with us, but he is bent on dairy farming and expects to help his father, after the first of the year, toward building up a dairy herd. Since he has proved to be a number one man we would like to know if you could point us to about two others about his caliber as soon as convenient."

THE INDUSTRIALIST.

BOARD OF REGENTS.

Published weekly during College year for \$1 per annum; students and alumni, 50 cents.

KANSAS STATE AGRICULTURAL COLLEGE. Manhattan, Kansas.

☆ ☆ ☆

PRES. E. R. NICHOLS.....Editor-in-Chief
PROF. J. D. WALTERS.....Local Editor
PROF. J. T. WILLARD.....Alumni Editor

HON. E. T. FAIRCHILD, President.... Ellsworth
HON. J. S. McDOWELL, Vice-President,
Smith Center
HON. W. T. YOE, Treasurer..... Independence
HON. WM. HUNTER, Loan Comm'r, Blue Rapids
HON. MRS. SUSAN J. ST. JOHN..... Olathe
HON. CARL VROOMAN..... Parsons
HON. J. M. SATTERTHWAITE..... Douglass

PRES. E. R. NICHOLS, Sec. *ex-officio*.

LOCAL NOTES.

To October 13, the College held one hundred nineteen farmers' institutes this summer. The total attendance of these meetings was 58,135.

The carpenter shop has just completed a very neat table, with case for storing the many large volumes of maps and charts in the library.

F. D. Buck, dairy student last year, writes that he is hard at work making cheese for the Big Springs Cheese Factory, Big Springs, Kan.

C. B. Ingman, '97, writes from his home, Barnes, Kan., that he intends to keep alive on dairy subjects and asks for a list of the best and latest books upon dairying.

The following professors will do the "reading" in the morning chapel exercises during the present year: Nichols, Walters, Metcalf, Weida, Stoner, Lockwood, Remick, Eyer, Goodell, McFarland, McKeever.

The Farm Department has received a call from Punjab, India, for Kafir-corn. When the heathen get the Kansas-grown seed of Kafir-corn and soy beans they will not suffer from drouth so frequently.

The Farm Department has put the hay from fifteen acres of cow peas in the barn this week. The yield is from one to two tons per acre on upland, depending upon the variety, and the hay is worth from \$5 to \$6 per ton in the mow.

Mr Arthur Blackman and Miss Annie Engel ['97], daughter of Mr. and Mrs. Carl Engel, were quietly married by Rev. William Campbell at his residence Tuesday evening. The young couple went immediately to their new home in the Campbell house on Colorado Street, where they will be at home to their friends after October 1.—*Nationalist*.

On May 28, the College dairy weighed twenty-three grade Hereford calves belonging to Emmet McDonald that were to run with the cows during the summer. At that time these calves averaged 182 pounds apiece. On October 15, 140 days later, these calves averaged 431 pounds apiece, making a gain of 249 pounds per head, or 1.77 pounds per day.

Professor Cottrell and Assistant Haney visited the great Hereford-Shorthorn exhibition at Kansas City. They want to urge every former student and all other friends of the College interested in cattle to visit this exhibit this week. It is the greatest assemblage of pure-bred cattle ever brought together. Stockmen who have many times visited the great Royal Show of England say that the Kansas City exhibit is immensely superior both in quality and in numbers.

Congressman Calderhead, of this district, addressed the students in chapel, Thursday morning, on the subject of good citizenship and true liberty. He congratulated them on their splendid opportunities to prepare for active life and mentioned by way of contrast some of the incidents of his early boyhood days—the log schoolhouse, the country pedagogue, and the penitent corner. He spoke impressively of the influence of free labor and right thought, of life's purpose and national destiny. The students showed by their applause that they appreciated the inspiring words of the veteran.

The teachers' excursion from Hutchinson, 310 strong, arrived at Manhattan last Saturday at about 11 o'clock and stormed "College Hill" at about noon. They moved in formidable processions from building to building and from shop to shop. At one o'clock they assembled before the library building to give photographer Dewey a chance to take their picture. Half an hour later as many of the visitors as could squeeze into the overcrowded chapel attended the oratorical exercises of the third-year class. The College band gave them an out door concert and all departed for home feeling that they had passed a profitable and interesting day at the State Agricultural College. Come again, ladies and gentlemen; the latch string hangs out.

Prof. Benjamin F. Eyer, recently elected to the chair of Physics and Electrical Engineering, is a Kansas man. He came to this State when a boy, just from the district school. After completing a four-years course in an academy in Brown county, he taught school for three years. He then took a course in Washburn College. From here he was called to Hiawatha academy as a teacher of sciences, where he stayed three years, until called to Washburn College as assistant in physics and mathematics. He had just begun work there when he was elected instructor in physics and biology, and vice-principal, in the Topeka high school. This position he held for five years, and had been re-elected for the sixth when he was called to the chair he now occupies at this College. The Professor is well known among the educators of Kansas as a talented, hard-working student and successful teacher. He has completed three-quarters of the course in his specialty in the University of Chicago and is planning to complete the work. The chair of physics at the Kansas State Agricultural College, recently enlarged by action of the Board of Regents, offers splendid opportunities for growth, and Professor Eyer has the energy to make the most of them.

A few of the yearlings reared on skim-milk at the College barn were sold October 20 and their places filled by young calves.

Doctor Lockwood will lecture before the North Central Kansas Teachers' Association at their Thanksgiving meeting at Beloit.

Saturday was a busy day for the Manhattan hack drivers, but they were out in full force and made things move at Chicago gait.

Robert E. Eastman, '00, writes he is well started in his work at Cornell University and is studying under Professors Roberts and Bailey.

Thursday morning Professor Cottrell and Assistant Haney left for an inspection of the great Hereford Shorthorn exhibit at Kansas City.

Student E. M. Amos is writing a weekly series of interesting items from the College, in the *Manhattan Republic*, under the heading "Campus Clatter."

Doctor Roberts, of Manhattan, escorted Congressman Calderhead, of this district, through College last Thursday and pointed out the many evidences of progress and growth.

The second-year class in chemistry has just begun the study of the atomic theory, and will soon be attempting to use equations and formulæ to represent their laboratory work.

Doctor Weida used the individuals in his advanced chemistry class to represent carbon and hydrogen atoms when there seemed to be confusion between the "ethylene" and "ethyldene" groups.

The new stone sidewalk from the main entrance of the campus to the College buildings is progressing rapidly. The work is being done by contractor Baggs, of Manhattan, under the direction of the Horticultural Department.

The first meeting for the school year of the Riley County Teachers' Association was held in the Christian church, at Manhattan, Saturday, October 20. The evening address was given by Superintendent Kendrick, of Geary county. The forenoon session was attended by many teachers from Reno county, who were present on an excursion to this College.

The Manhattan Grange met at Professor Cottrell's residence Wednesday, October 17. Mr. and Mrs. Clothier and Mr. Haney were initiated. The following members of the College force are members of the Grange: Hitchcock, Harper, Cottrell, Westgate, Clothier, and Haney. Mrs. Hitchcock, Mrs. Cottrell and Mrs. Clothier are also members of this farmers' organization.

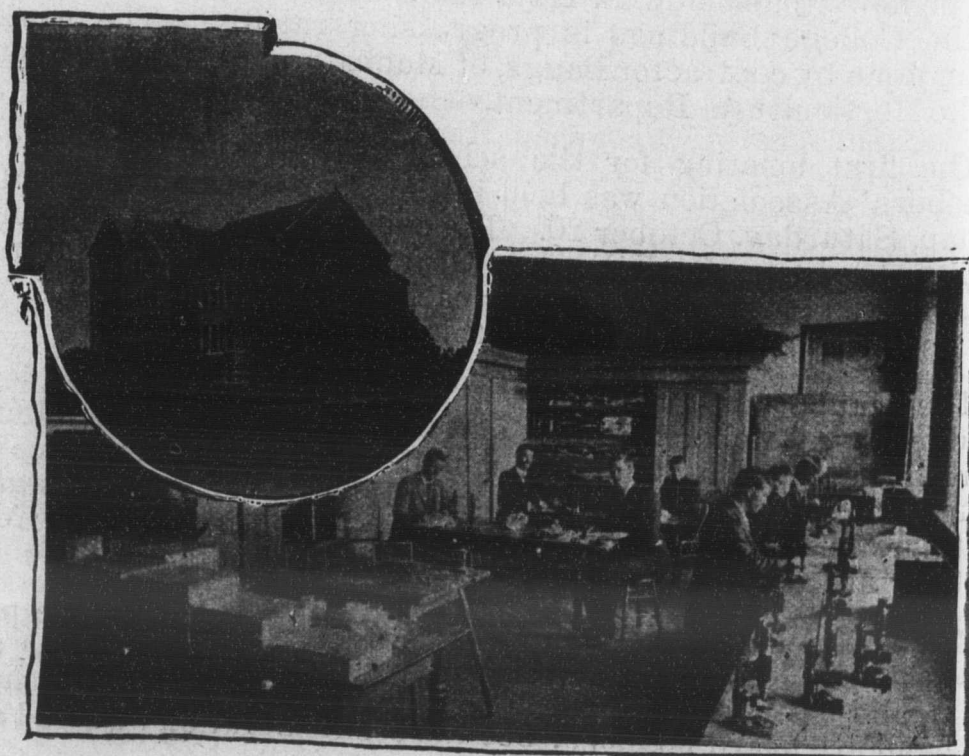
The Wild West show has come and gone and the athletic park has lost its picturesque aspect. The cowboys, the Indians and the Arabs have folded their tents and left the city, the echoes of the band are heard no more; but the conglomeration was wild and

woolly while it lasted. We hope for the good of the community that this show will show elsewhere the next time they make the rounds of the State.

The Faculty at their last meeting have voted to transfer permanently some of the studies of the course. Geology will take the place of logic in the spring term, and logic that of geology in the winter. Oratory II and agricultural mechanics will be transposed in the third year. The projection drawing of the General Course will be taught in the fall term of the third year, and oratory will come in the winter term of the third year.

Lecture-coure seat drawing at Sheldon's jewelry store, Monday, October 22, at 9:00 A. M. Course tickets, \$1.75 and \$1.50 each. Single tickets, 35 and 45 cents each. James Hedley, October 29; Hon. J. P. Dolliver, November 16; Lovett's Boston Stars, November 26; J. T. Trowbridge, December or March; Uncle Josh Picture Play, December 13; Oxford Musical Club, January 24; Ottumwa's Male Quartet, February 7; Rev. James McClary, March 15.

The Blue Rapids *Times* says of Doctor Orr's stereopticon exhibition at that place: "A very interesting feature was a number of finely colored views of the Kansas State Agricultural College buildings and grounds, which, with the descriptive talk by Mr. Orr, gave pleasing and interesting information not easily obtainable by numbers who have not visited this growing and popular College. Mr. Orr's statement that it is the largest Agricultural College in the United States was information to many, as pleasing as it is true. In one sense the entertainment is quite an advertisement for the College."



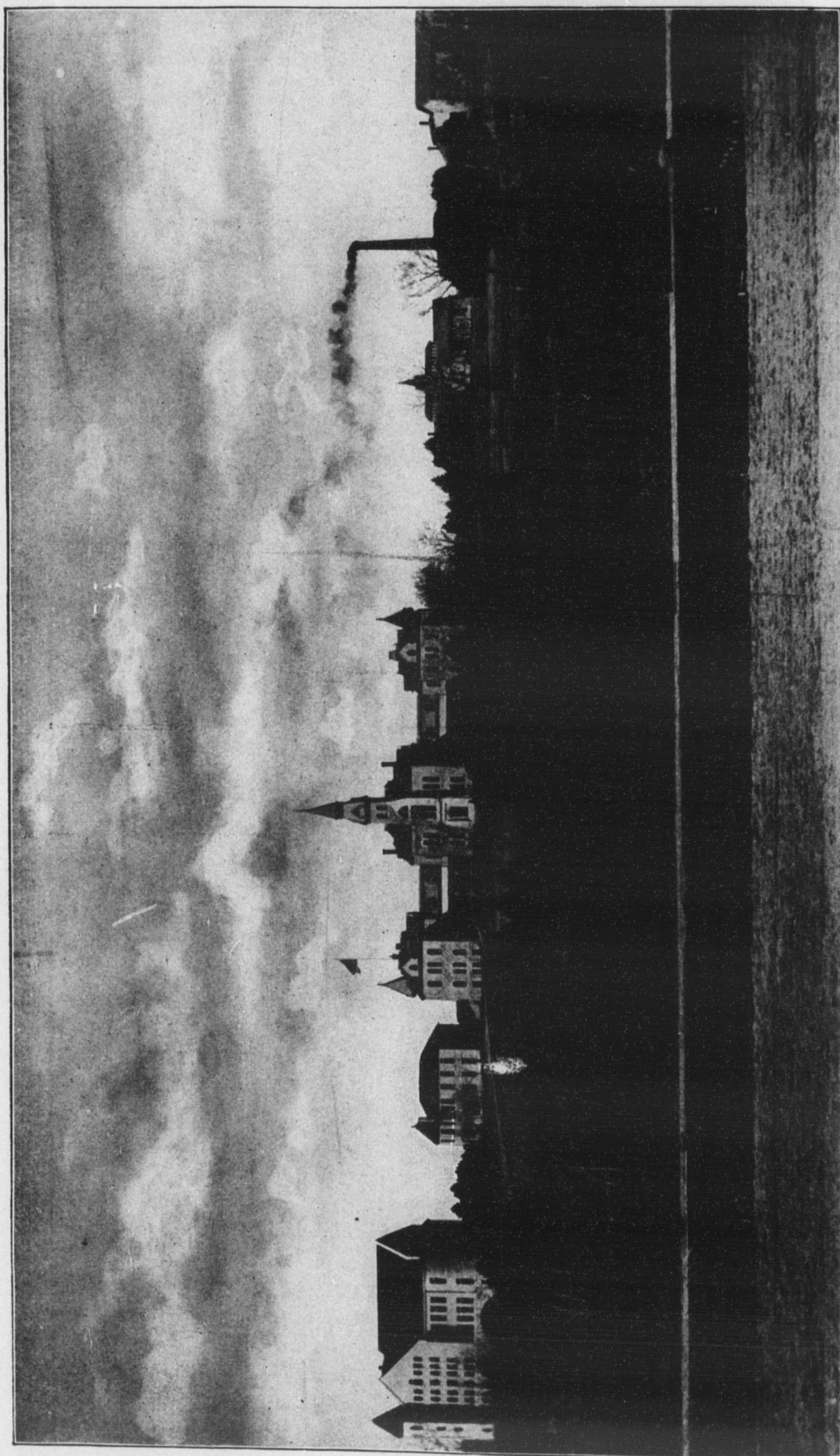
VOLUME 27

NUMBER 4

The
Industrialist.

FARMERS'.....
SHORT COURSE
AND.....
DAIRY COURSE.





GENERAL VIEW OF BUILDINGS AND GROUNDS.

KANSAS STATE AGRICULTURAL COLLEGE,
MANHATTAN, KANSAS.

FARMERS' SHORT COURSE

IN

Agriculture, Horticulture, and Mechanics.

JANUARY 3 TO MARCH 22, 1901.

The short course is designed for those farmers and farmers' boys who cannot spare the time or the money to take our regular four-year course. The time required for the FARMERS' SHORT COURSE is two winters, twelve weeks each, coming at a time of year when men on farms can best leave their work. The training offered is in the methods of farm production which will give the greatest cash returns. With money-making as the object, instruction is given in crop production, feeding and breeding, orcharding, gardening, and farm shop work. Diseases of farm animals, the study of bacteria and insects, botany, chemistry and physics are treated from a strictly practical standpoint. The aim of the course is to give instruction which will enable the student to grow larger and better crops, increase the fertility of the soil while taking paying crops from it, secure cheaper and greater gains in feeding, maintain the health of the animals on the farm, improve the quality of all the products of the farm and market them to the best advantage.

Such a training pays. Putting his knowledge of crop production and botany together, one of our students, by a simple method of crossing, has increased his yield of corn ten bushels per acre. Wheat experiments conducted at this College for eighteen years show that proper preparation before seeding increases the yield forty per cent. Steers fed the ordinary ration fatten in from five to seven months; on a balanced ration they are ready for market in from 80 to 100 days, and a feeder who knows how can produce a balanced ration as cheaply as the ordinary one. The College purchased half of a farmer's herd of hogs, taking a fair average of the lot. We fattened these hogs in fifty days while the farmer, doing the best he could, marketed his in 110 days. We spent less for feed and had risk from disease for less than half the time. By feeding alfalfa hay with grain to fattening hogs the College secured 868 pounds of pork per ton of hay fed. It pays to know what type of animal gives best results for feed consumed. In 1898 a scrub cow of the dairy type gave the College milk worth \$40.37 above cost of the feed, while another scrub not of the dairy type yielded milk during the year worth \$6.25 less than her feed. Steers of the beef type required one-half the feed consumed by steers not having a beef form to make a pound of gain. Come and study animal form as an index to feeding qualities. On many

farms in a single year the cost of taking this course could be saved by the knowledge gained in our carpenter and blacksmith shops. Inoculation is an almost sure preventive of blackleg. Students taking the Farmers' Short Course perform the work of inoculation in the College feed lots.

If a man is to manage his own farm there can be no question but that it will pay, and pay well, to take the Farmers' Short Course. If he is without capital and must work for others, it will pay him equally as well to take this course. We have many calls for farm foremen, herdsmen, creamery and skimming-station men, managers of fruit farms and nurseries, and greenhouse foremen. The calls are all made for active, pushing men with college training.

ADMISSION.

Any person eighteen years of age, or older, of good character, who has sufficient knowledge to understand the lectures and text-books used, is admitted without examination. An applicant should have a common-school education and should be able to handle readily problems in fractions, decimals, and percentage. Examinations will be held at intervals during the term. Students not doing satisfactory work will be promptly dismissed.

EXPENSES.

Tuition is Free. Board and rooms can be secured for \$2.50 and upward per week; lunches may be had at the college dining-room at cost; laundry costs about fifty cents per week. Incidental expenses will be high or low as the individual determines. The total of all expenses for the entire time, exclusive of railroad fare in coming and returning, need not exceed forty dollars, and with close economy can be made less. Students in the short course cannot expect to earn any part of their expenses while at the College, as every hour will be needed for class work, practice work, or study. Any bright, earnest young man can save during the summer sufficient money to take a winter's term here.

COURSES OF STUDY.

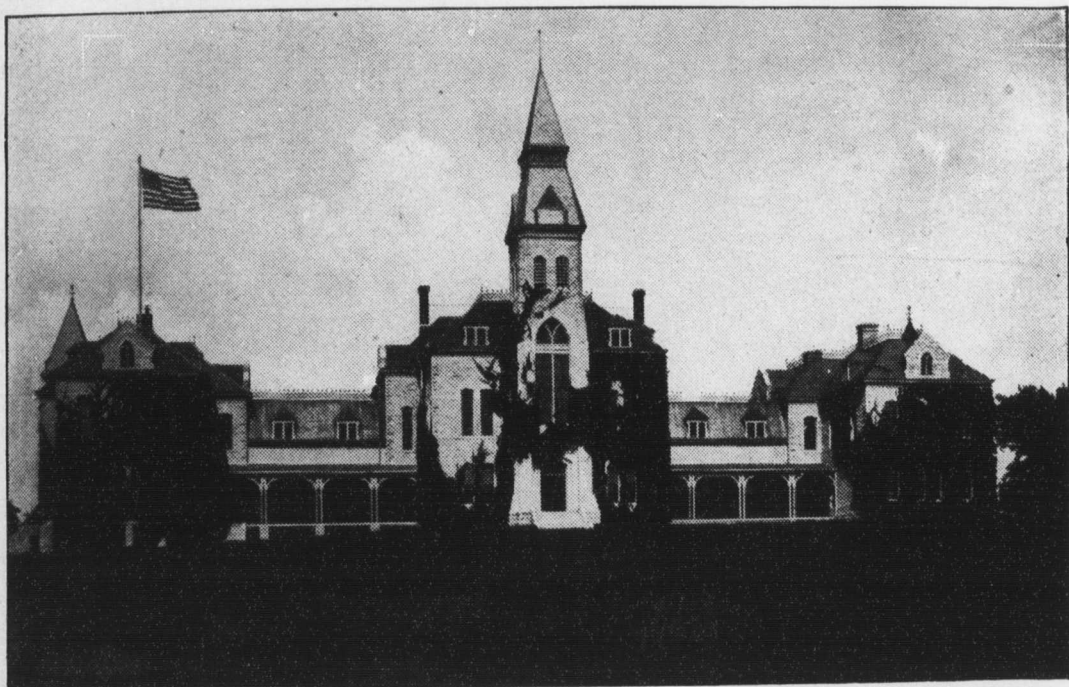
First Year (Winter Term, Twelve Weeks).

Feeds and Feeding	5 hrs. per wk.
Horticulture, Entomology.....	5 " "
Crop Production, Bookkeeping.....	5 " "
Diseases of Farm Animals, Bacteriology.....	5 " "
Fruit Propagation.....	5 " "
Blacksmithing, Repairing.....	10 " "
Science Lectures	1 " "

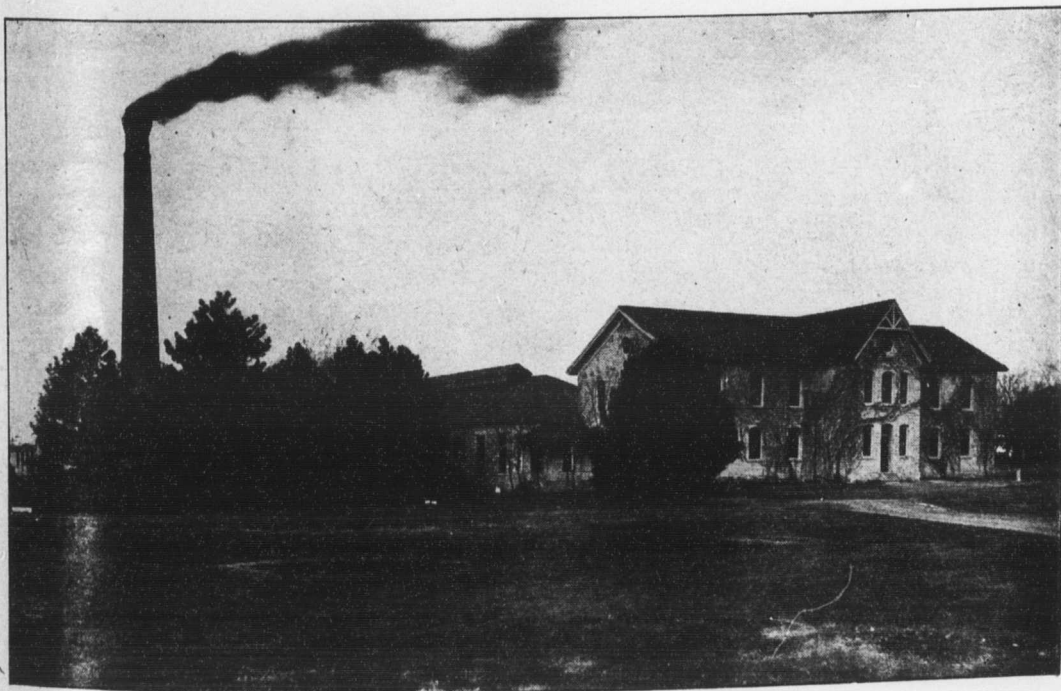
Second Year (Winter Term, Twelve Weeks).

In the second year the course divides, and the student can take either the course in agriculture or the course in horticulture, as he desires.

AGRICULTURE.		HORTICULTURE.	
	Hrs. per wk.		Hrs. per wk.
Breeds and Breeding	5	Vegetable-gardening, and Small-fruit Culture.....	5
Dairying, Farm Architecture	5	Orchard Treatment, Pomology.....	5
Botany	5	Diseases and Insects	5
Physics and Chemistry	5	Physics and Chemistry.....	5
Shops, Farm Carpentry, etc.	10	Shop, Farm Carpentry, etc.	10
Farm Practice	5	Horticultural Practice.....	5
Science Lectures.....	1	Science Lectures.....	1



MAIN BUILDING.



SHOPS.

OUTLINE OF STUDIES.

FIRST YEAR.

Feeds and Feeding. The properties of feed stuffs, and their combination to secure good returns at least cost with products having the desired qualities; effect of foods on quality of products; construction of farm buildings and appliances to secure best returns from feed and for saving labor; a study of the feeding on the College farm. Text-book, Henry's "Feeds and Feeding." Lectures.

Horticulture. General principles underlying plant growth; structure and functions of the various parts of the plants; nutrition, formation of seed, etc.; propagation by seedage, cuttage, graftage, and layerage; environment, including the effects of temperature, light, food and water-supply; possibilities of improvement by cultivation, training, and selection. Text-book, Goff's "Principles of Plant Culture."

Fruit Propagation. Practice work in the various methods of budding and grafting, and storing of the same; treatment of grafted stock during the winter and setting it into nursery rows in spring; the making of herbaceous and hardwood cuttings; winter treatment of tree seeds in preparation for spring planting.

Entomology. Nature, time and extent of the injuries from insect life, and a knowledge of the remedies, when and how to apply them. Structure of a number of insect types; study of the beneficial insects, and the more injurious forms attacking farm, orchard and garden crops. Use of preventives and insecticides.

Crop Production. A study of the soil, the plant, and crop growing, including the management of the soil for maintaining and increasing its productivity, the improvements of worn-out soils, conservation of moisture and the preparation of the soil, selection of the seed, method of planting, treatment after planting and harvesting of Kansas field crops to secure best returns at least cost. Text-book, Bailey's "Principles of Agriculture." Lectures.

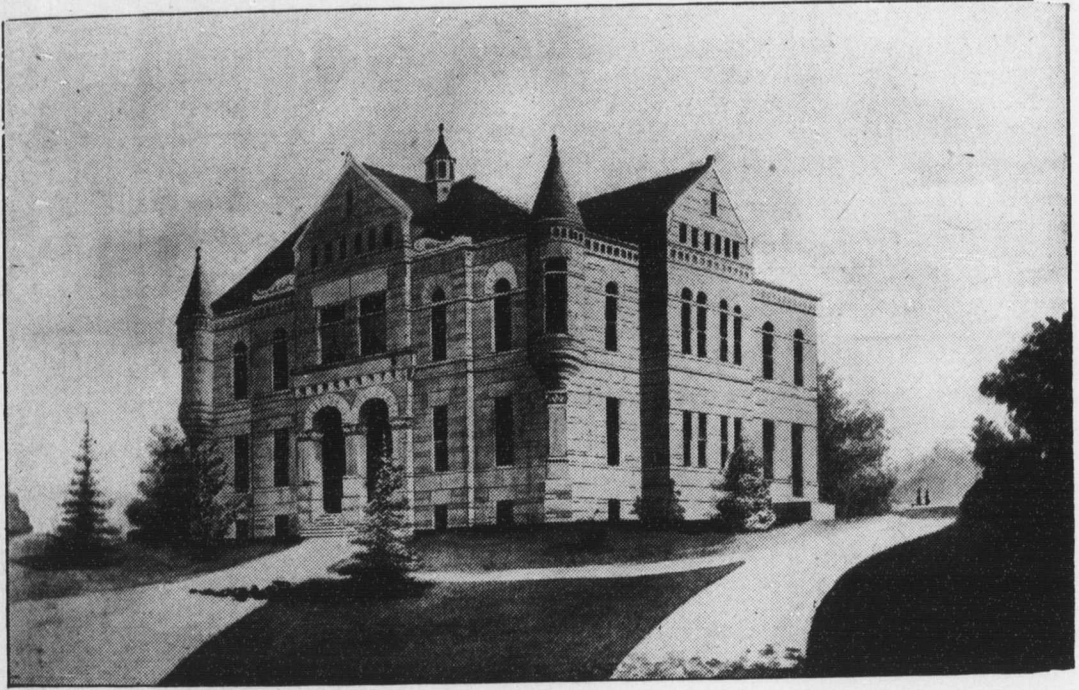
Bookkeeping. The principles are mastered through their practical application to forms adapted to farm affairs. Each student keeps a regular set of books, in which accuracy and neatness are not less important than a correct understanding of principles. A set of books is developed which would be practical for every farmer, accounts being kept with various departments of his business—fields, granaries, garneries, orchards, hogs, cattle, milch cows, etc.

Diseases of Farm Animals. The common ailments of farm animals are discussed, their causes and symptoms explained, and preventives and remedies suggested. Inoculation against blackleg will be performed by the student in this course.

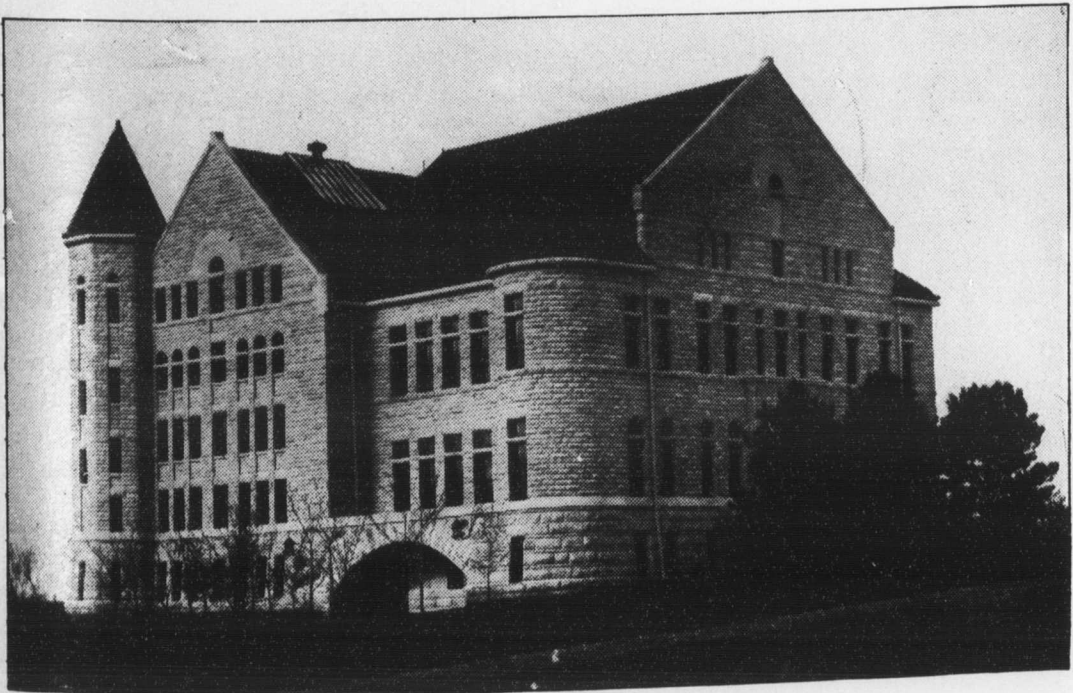
Bacteriology. Characteristics of bacteria; their relation to health and disease of man and animals, to soil fertility, and to quality of dairy products; principles and methods of disinfection.

Blacksmithing. Forging and welding, construction of singletree clips, wagon ironing, clevises, horseshoes, sharpening and tempering plows and tools, general repair work. Advanced work is also offered in the care and management of boilers and engines. If the student desires, he can make a forge and set of blacksmith tools to take home with him, paying only for the iron used.

Science Lectures. Lectures will be given in both the first and second years of the course by the instructors on subjects of most interest to the students in this course.



AGRICULTURAL HALL.



LIBRARY AND AGRICULTURAL SCIENCE HALL.

SECOND YEAR—Agriculture Course.

Breeds and Breeding. Characteristics of the breeds of live stock and their adaptability to Kansas conditions; principles of breeding; form as an index of qualities; selection and judging of live stock. Lectures.

Dairying. Milk: its secretion, nature, and composition; causes and conditions influencing the the quality and quantity of milk; handling of milk for the market and for butter-making, including milking, straining, aerating, cooling, preserving, and shipping; creaming of milk by gravity methods and by the separator; cream ripening and churning; washing, salting, working, packing and marketing butter. Text-book, Wing's "Milk and its Products."

Farm Architecture. Each student will be required to prepare plans, elevations, sections, detailed drawings and specifications of a sanitary farm barn, with outbuildings.

Botany. The laws of plant growth, which have a direct bearing upon the raising of grasses, grains, clovers, forage-plants, and weeds; a study of the common fungi that affect cultivated plants; seed testing; practical methods of farm seed breeding.

Physics. A consideration of the principles of physics which underlie farm operations, farm mechanics, control of soil moisture, physical laws of tillage, meteorology. A knowledge of the law of physics enables the farmer to store moisture and to reduce loss of water from the soil by evaporation. It is the practical application of these laws that will solve our drought problem.

Chemistry. The relation of soils to earth, air, and water, formation and characteristics of different kinds of soils, soil enrichment and improvement, the chemistry of feeds and of animal products.

Farm Carpentry. Elementary woodwork in joinery and construction, followed by general woodwork and carpentry, care and use of farm machinery, the building of frame structures, such as stables, piggeries, poultry-houses, ice-houses, and farm creameries, will be given both by lectures and by practical work.

SECOND YEAR—Horticulture Course.

Vegetable-gardening and Small-fruit Culture. The first half of the term is devoted to vegetable growing, consideration being given to the raising of vegetables for home and market; locations, soils, fertilizers, tools, irrigation, etc., best suited for crops grown in kitchen- and market-gardens; the growing of extra early or late crops, their special treatment, cultivation, and harvesting; the means employed in the preservation of vegetables for future use; vegetables suited to Kansas conditions, methods of improvement, etc. Small-fruit culture occupies the second half of the term. The subject is treated in much the same manner as vegetable-gardening, taking up the cultivation of small fruits and the methods employed in their propagation, handling, and improvement. Five hours per week. Lectures.

Orchard Treatment and Pomology. This branch is devoted to the practical treatment of orchard work; location, soil, planting, pruning, cultivation and fertility of the orchard; a study of the use and value of windbreaks—how best made, trees suitable for same in Kansas; causes of plant variation and methods employed in the improvement of orchard fruits; grape growing in the West, a study of the distinctive characteristics of varieties, their value for home and market use; lists of varieties of fruits suitable for Kansas orchards; a general treatment of planning the grounds, location of houses, barns, gardens,

orchards, lawns, fields, etc. Five hours per week. Text-book, Bailey's "Principles of Fruit-growing." Lectures, with library references.

Orchard Diseases and Insects. The work of this branch is the investigation of various orchard pests. Life-history and depredations of insects and fungous diseases attacking horticultural crops, together with means of combating them, preventives, and remedies; mechanical devices, spraying compounds and machinery, and methods employed in the warfare.

Chemistry and Physics. In classes with the agricultural course.



THE FARM BARN.

THE DAIRY SCHOOL.

January 3 to March 22, 1901.

We have expended \$25,000 for an agricultural building, \$6000 for dairy apparatus, and \$3000 for a dairy herd and shelter, giving Kansas one of the best equipped dairy schools in the United States. The school will be held January 3 to March 22, 1901, and thorough instruction will be given in milk production, creamery butter-making, factory cheese-making, and private dairying.

Kansas offers ideal conditions for profitable dairying—mild climate, short winters, fertile soils, cheap feeds, and good markets. The mild winters necessitate cheap shelter only. Kansas butter can be delivered in good condition to our best Eastern markets for one and one-fourth cents per pound—a lower rate than that paid by many Eastern farmers situated within 100 miles of these markets. Kansas butter can be delivered to Rocky mountain markets for two cents per pound and to English markets for less than two cents per pound. A good market is opening in China and Japan.

Dairying offers to Kansas farmers the advantages of monthly cash returns the year round, profitable employment for the entire year, and a good home market for the farmers' crops on the farm where they are produced. Butter brings more per pound than any other farm product, and Kansas farmers, many of whom live distant from the railroads, can condense tons of cheap, rough feed into pounds of high-priced, easy-marketed butter.

There are nearly 500 creameries, skimming stations and cheese factories in Kansas. The more milk each of these plants receives the less will be the cost of operation per 1000 pounds of milk received, and the higher can be the price per pound paid for butter-fat. To be most profitable to the farmers of the state, these plants must receive ten times their present supply of milk. The greater the production of milk and butter-fat in the state the greater will be the profits to all connected with the dairy interests. Kansas is well equipped with dairy manufacturing establishments, but the milk supply is much too small to make dairying most profitable. For these reasons the chief work of the Kansas dairy school will be to give instruction to farmers in milk production, including the selection of the cow, handling and feeding her, the care of her milk and calf, and the feeding of skim-milk, buttermilk and whey to secure greatest profit.

Kansas cows have been bred chiefly for beef. Secretary Coburn reports the average yearly value of the product of the Kansas dairy cow to be \$9.65. Several creameries report that the average receipts per cow per year for their patrons is \$20. This College secured, in 1898, an average per cow of \$37.75 for butter-fat, at creamery prices, from a scrub herd that in quality were much below the average cows of the state; and one scrub cow, for which we paid \$30, returned \$60.88 for butter-fat, and gave a net profit above cost of feed of \$40.37.

These records show that, with the cows they now own, Kansas dairymen can, with proper feed and care, double and treble the present milk yield and make an even greater increase in their net profits. We want farmers and farmers' boys from every township in Kansas to attend our dairy school and learn to feed and handle cows so as to secure these results. Kansas dairymen buy thousands of

tons of mill feed. Those who know how secure the highest milk yields with feeds grown on the farm. Come and learn how.

After the Kansas dairyman has learned to feed and handle the cows he now owns, he can still further increase his profits by selection and breeding. T. A. Borman, Navarre, Kan., after six years of selection and breeding, selling his milk to a creamery, secured an average income per cow of \$81.17. You can do as well when you know how. Come to our dairy school this winter and learn.

CREAMERY BUTTER-MAKING.

Our appropriation has enabled us to secure a model creamery equipment, and instruction will be given in creamery butter-making and creamery management. A butter-maker in Kansas must know more than how to make the best quality of butter and to successfully manage a creamery. He must be able to show his patrons how to select, feed and handle the cow and handle her products. He must be able to teach them how to raise good calves with skim-milk and how to get the most out of skim-milk and buttermilk in feeding hogs. He must show his patrons what crops to raise in order to secure good milk yields without buying grain. He must show his patrons how to make shelter for dairy stock and products that will be cheap and at the same time suitable for the work. For this reason, all students taking creamery butter-making will be required to also take the instruction we give to the farmers.

CHEESE-MAKING.

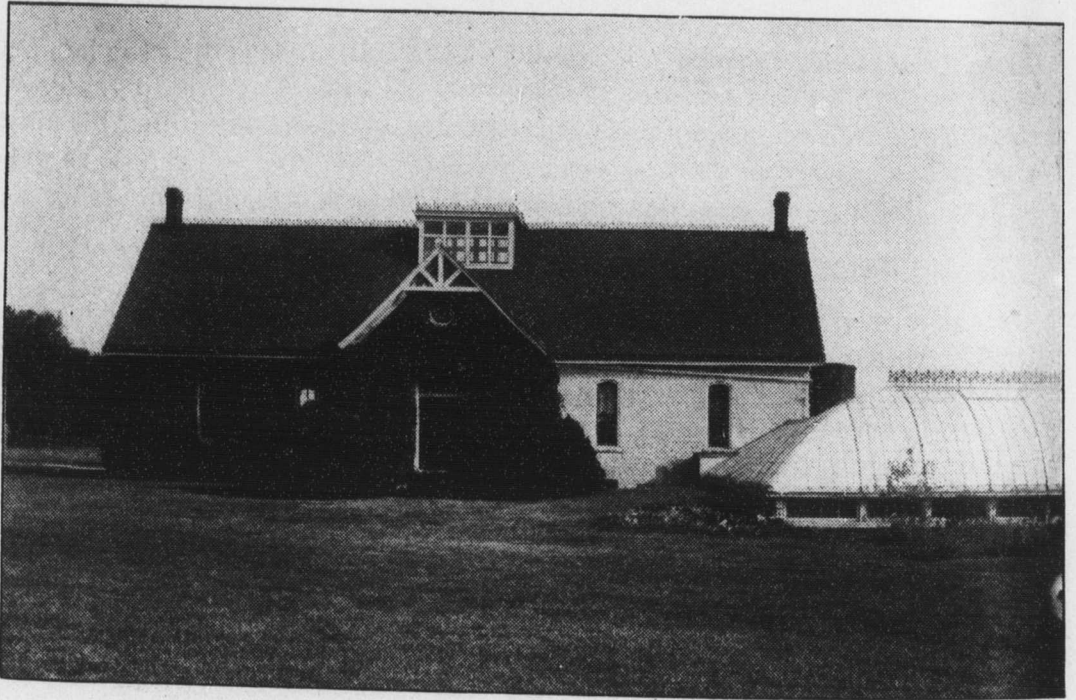
Kansas is particularly adapted to the production of the highest grades of cheese, and when we have competent cheese-makers scattered over the state Kansas will not only supply her home demand, which she fails to do now, but will sell cheese in all the world's markets. We have a complete equipment for factory cheese-making, the best constructed cheese-ripening rooms in the state, and will furnish thorough instruction in factory cheese-making. All students taking cheese-making will also be required to take the instruction given to farmers, for the reasons given under the head of "Creamery Butter-making."

ADMISSION.

Any person eighteen years of age or older, of good character, who has sufficient knowledge to understand the lectures and text-books used, is admitted without examination. An applicant should have a common-school education and should be able to handle readily problems in fractions, decimals, and percentage. Examinations will be held at intervals during the term. Students not doing satisfactory work will be promptly dismissed.

EXPENSES.

Tuition is Free. Board and rooms can be secured for \$2.50 and upward per week; lunches may be had at the College dining-room at cost; laundry costs about fifty cents per week. Each student will need two white suits and caps for use in the dairy room. These can be purchased in Manhattan. Breakage will be charged at cost. Incidental expenses will be high or low, as the individual determines. The total of all expenses for the entire time, exclusive of railroad fare in coming and returning, need not exceed forty dollars, and, with close economy, may be made less. Students in the dairy course cannot expect to earn any part of their expenses while at the College, as every hour will be needed for class work, practice, or study.



HORTICULTURAL HALL.



ARMORY AND VETERINARY SCIENCE.

EQUIPMENT.

One hundred dairy cows; a herd of calves being raised on skim-milk; a dairy barn for 80 cows; a model dairy-school building, two stories and basement, 100 x 105 feet, with butter, cheese, milk and testing rooms, cheese-ripening cellars, and cold-storage rooms; all apparatus needed for milk testing and for handling milk, from the cow through the creamery to the butter-tub or cheese room. Students in the dairy course have free use of the College library, containing 19,704 bound volumes and about 14,600 pamphlets, and in which are kept on file all the leading dairy and farm papers. The Students' Farmers' Club meets weekly to discuss farm questions, and furnishes a valuable part of the education offered.

COURSE OF STUDY.

Principles of Agriculture.....	one-half term	} 5 hrs. per wk.
Dairy Bookkeeping.....	one-half term	
Dairying.....	one-half term	
Creamery Butter-making, or.....	} one-half term	} 5 " "
Cheese-making, or.....		
Private Butter-making.....		
Feeds and Feeding.....	one-half term	} 5 " "
Breeds and Breeding.....	one-half term	
Bacteriology.....		3 " "
Diseases of Dairy Animals.....		2 " "
Boilers and Engines.....		5 " "
For farmers—Milk Testing and Private Butter-making.....		20 " "
For creamery men—Milk Testing and Creamery Butter-making.....		20 " "
For cheese-makers—Milk Testing and Factory Cheese-making..		20 " "

OUTLINE OF STUDIES.

Principles of Agriculture. Treating of soils, crops, tillage, and manures; the selection, laying out, equipping and management of Kansas dairy farms. Text-book, Bailey's "Principles of Agriculture."

Dairy Bookkeeping. Practice in bookkeeping that will enable the student to understand the underlying principles, followed by training in keeping books for farm, dairy and creamery accounts.

Dairying. Milk: its secretion, nature, and composition; causes and conditions influencing the quality and quantity of the milk; handling of milk for the market and for butter-making, including milking, straining, aerating, cooling, preserving, and shipping; creaming of milk by the separator; cream ripening and butter-making. Text-book, Wing's "Milk and its Products." Lectures.

All students will study dairying together for the first half of the term. This class will then be divided, creamery men taking lectures on *creamery butter-making*, the cheese-makers on *factory cheese-making*, and the dairymen on *private butter-making*.

Feeds and Feeding. Properties of common feed stuffs, their effect on character and yield of milk and butter, and their adaptability to Kansas conditions of dairying. The compounding of dairy rations to secure good yields at least cost with products having desired qualities. Careful study of the feeding of the College dairy herd will also be required. Text-book, Henry's "Feeds and Feeding."

Breeds and Breeding. Characteristics of leading breeds of cattle and their adaptability to Kansas dairy farming; dairy farm, and the selection of dairy

animals; care and management of the dairy herd; principles of stock-breeding. Lectures.

Bacteriology. Relations of bacteria to methods of keeping milk, ripening cream and cheese, and flavoring butter; diseases of milk, their relations to the health of man and animals; principles of disinfection. Text-book, Russell's "Bacteriology." Lectures.

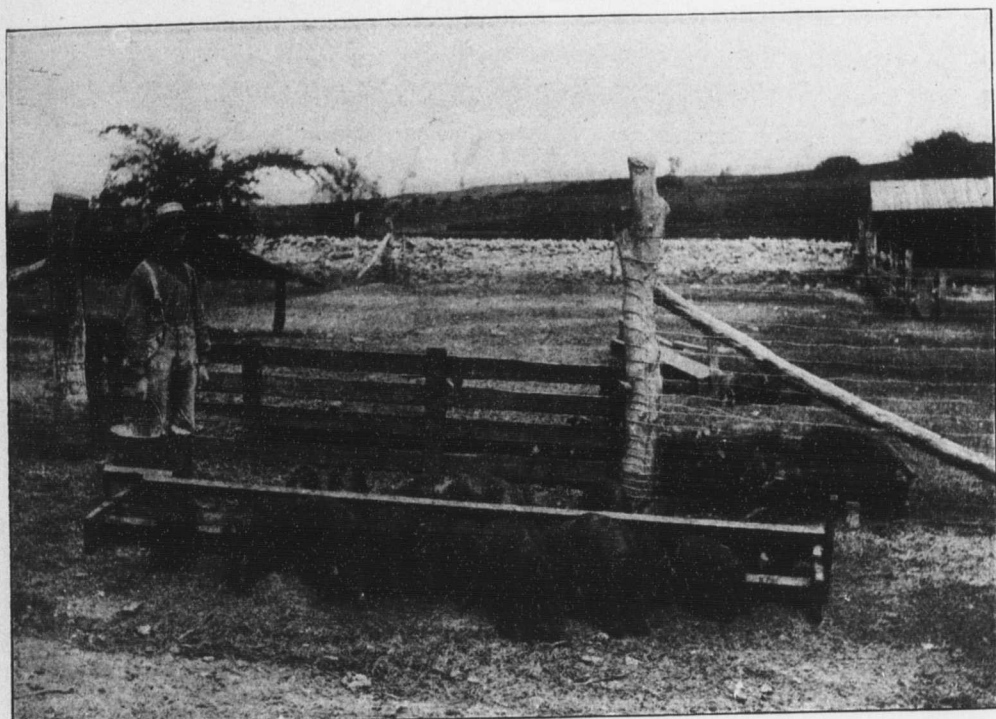
Diseases of Dairy Cattle. The common ailments of calves and dairy cows are discussed and their causes and symptoms explained, remedies and preventives suggested, all from a practical farmer's standpoint. During the dairy school the College herd will be tested with tuberculin and the students taught how to make the test.

Boilers and Engines. Lectures and practice in the firing of boilers, care and running of engines, pumps, etc.; practice in shops.

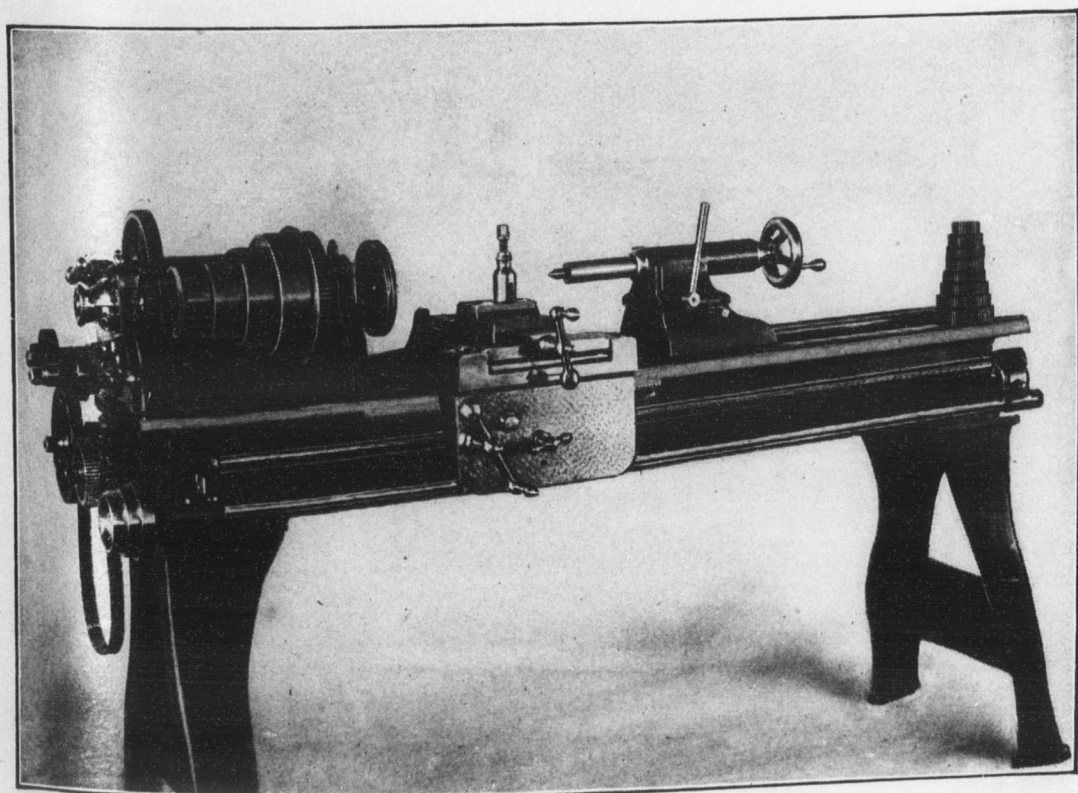
Butter-making and Milk Testing. Practice in handling milk and its products from the time it leaves the cow until it is marketed as butter, cheese, or sanitary milk. Students may choose either creamery butter-making, cheese-making, or private dairying. Thorough instruction and practice will be given in all three of these lines. The dairy rooms will be fully equipped with hand and power separators, Babcock tests, churns and butter-workers, aerators, heaters, sterilizers, milk and cream vats, factory-cheese apparatus, Mann's acid tests, and other needed apparatus. Many manufacturers have volunteered to loan us machinery, so that the dairy students may make tests of the work of the different makes of separators, churns, etc.

For further particulars, address

ERNEST R. NICHOLS,
President Agricultural College,
Manhattan, Kan.



STUDENT FEEDING EXPERIMENTAL PIGS.



LATHE BUILT BY STUDENTS AT THE SHOPS.

Volume 27.

Number 5.

THE INDUSTRIALIST

ISSUED WEEKLY BY

KANSAS STATE
AGRICULTURAL COLLEGE

☆ ☆ ☆

Editor-in-Chief,

E. R. Nichols

Local Editor,

J. D. Walters

Alumni and Former Students, Prof. J. T. Willard

☆ ☆ ☆

Published by
PRINTING DEPARTMENT
J. D. Rickman, Supt.

Historical Society

BOARD OF INSTRUCTION.

ERNEST R. NICHOLS, A. M. (University of Iowa), President.....	512 Houston street
JOHN D. WALTERS, M. S. (Kansas State Agricultural College).....	North end of Sixth street
Professor of Industrial Art and Designing.	
ALEXANDER B. BROWN, (Boston Music School), A. M. (Olivet).....	817 Houston street
Professor of Music.	
JULIUS T. WILLARD, M. S. (Kansas State Agricultural College).....	1211 Moro street
Professor of Applied Chemistry.	
ALBERT S. HITCHCOCK, M. S. (Iowa Agricultural College).....	College Hill, 2 miles N. W. of College
Professor of Botany.	
FREDRIC A. METCALF, O. M. Superioris Honoris (Emerson Coll. Oratory) 6th and Poyntz ave.	
Professor of Oratory.	
GEORGE F. WRIDA, Ph. D. (Johns Hopkins).....	517 Fremont street
Professor of Pure Chemistry.	
HENRY M. COTTRELL, M. S. (Kansas State Agricultural College).....	College Campus
Professor of Agriculture, Superintendent of Farm.	
MISS MINNIE A. V. NELLIE STONER, (Boston N. S. of H. A.), B. S. (S. D. A. C.) Fourth and Osage	
Professor of Domestic Science, Dean of Women's Department.	
JOSEPH D. HARPER, M. S. (Rose Polytechnic Institute) Houston st., between 6th. and 7th. streets	
Professor of Mechanical Engineering, Superintendent of Shops.	
EDWIN A. POPENOE, A. M. (Washburn).....	Seventh and Osage streets
Professor of Horticulture and Entomology, Superintendent of Orchards and Gardens.	
FRANK C. LOCKWOOD, Ph. D. (Northwestern).....	Corner Fifth and Humboldt
Professor of English.	
BENJ. L. REMICK, Ph. M. (Cornell College).....	Fourth and Osage
Professor of Mathematics.	
BENJ. F. EYER.....	
Professor of Physics and Electrical Engineering.	
C. E. GOODELL, A. M. (Franklin).....	
Professor of History and Economics.	
MISS HARRIET HOWELL, (Pratt Institute).....	Corner Poyntz and Juliette avenues
Superintendent of Domestic Art.	
JOSHUA D. RICKMAN, I. T. U.....	911 Osage street
Superintendent of Printing.	
MISS JOSEPHINE T. BERRY, A. B. (Kansas University).....	Sixth street and Poyntz avenue
Librarian.	
B. S. MCFARLAND, A. M. (Miami).....	Fourth and Osage
Principal Preparatory Department.	
MISS FLORENCE BALL.....	N. E. Cor. Juliette and Fremont streets
Director of Physical Training.	
MISS LORENA E. CLEMONS, B. S. (K. S. A. C.), Secretary.....	Corner Fourth and Laramie
SEPTIMUS SISSON, S. B. (Chicago), V. S. (Toronto).....	Cor. Manhattan avenue and Moro
Associate Professor of Veterinary Science and Biology.	
D. H. OTIS, M. S. (Kansas State Agricultural College).....	College Hill
Assistant Professor of Dairying.	
WILLIAM ARCH MCKEEVER, A. M. (Kansas University).....	
Assistant Professor of English and Philosophy.	
MISS JOSEPHINE C. HARPER, Instructor in Mathematics.....	Corner Sixth and Pierre streets
MISS ALICE RUPP, (Indiana State Normal), Instructor in English.....	
CHARLES EASTMAN, Cadet Major and Acting Commandant.....	
William L. House, Foreman of Carpenter Shop.....	Corner Sixth and Colorado
Chas. W. Pape, M. S. (K. S. A. C.), Ass't in Zoölogy and Ass't Curator Museum.....	918 Osage st
R. W. Clothier, M. S. (K. S. A. C.), Assistant in Chemistry.....	Fremont, between Fifth and Sixth
Margaret J. Minis, Assistant Librarian.....	Fourth and Moro streets
R. H. Brown, M. T. (Kan. Con. of Music), B. S. (K. S. A. C.), Ass't in Music.....	817 Houston street
J. M. Westgate, M. S. (K. S. A. C.), Assistant in Botany, Cor. Manhattan avenue and Vattier	
May Secrest, B. S. (K. S. A. C.), Assistant in Domestic Art, Cor. Leavenworth and Seventh	
Wm. Anderson, B. S. (K. S. A. C.), Assistant in Mathematics.....	Cor. Humboldt and Juliette ave
Gertrude Barnes, Assistant Librarian.....	Cor. 9th and Moro
Albert Dickens, B. S. (K. S. A. C.), Assistant in Horticulture, Fremont and Manhattan avenue	
William Baxter, Foreman of Greenhouses.....	
J. G. Haney, B. S. (K. S. A. C.), Ass't in Feeding and Field Experiments, Manhattan ave and Kearney	
Mary Pritner, B. S. (K. S. A. C.), Assistant in Domestic Science.....	Cor. 7th and Leavenworth
Theodore Lindquist, M. S. (Northwestern), Ass't Physics.....	Cor. Fifth and Humboldt
W. M. Sawdon, B. S. (Purdue), Assistant in Mechanics.....	Juliette and Houston
O. I. Purdy, B. S. (K. S. A. C.), Assistant in Printing.....	1216 Fremont street
Ada Rice, B. S. (K. S. A. C.), Assistant in Preparatory Department.....	Osage and 8th. street
Louis Wabnitz, Foreman Iron Shops.....	5th and Osage
Henry Van Leeuwen, Instructor in Cheese Making (U. W. D. S.).....	Manhattan and Kearney
E. W. Curtis, Instructor in Butter Making.....	
Florence L. Grant (Mass. Normal Art School), Assistant in Drawing.....	Fourth and Osage
A. T. Kinsley, B. S. (K. S. A. C.), Assistant Veterinary Department.....	
Elizabeth Agnew, B. S. (K. S. A. C.), Assistant in Domestic Science.....	
Jacob Lund, M. S. (K. S. A. C.), Engineer.....	Cor. Tenth and Kearney
C. Jeanette Perry, B. S. (K. S. A. C.), Executive Clerk.....	Corner Colorado and Fifth
W. R. Lewis, Janitor.....	N. E. corner Main College Building
Archie Huycke, Secretary to President.....	Manhattan avenue and Kearney

THE INDUSTRIALIST.

VOL. 27.

MANHATTAN, KAN., OCTOBER 30, 1900.

No. 5

DRAMATIC TRAINING AS AN EDUCATIONAL FACTOR.

IN THE first place, let us distinguish clearly in our own minds what we mean by the term "dramatic," and then we may more definitely decide as to the educational value of that kind of training, and the better assign it to its proper place in a scheme of education.

A dramatic composition is one in which the attempt is made to set forth some phase of human experience, either grave or humorous, by means of a series of scenes enacted by living persons. Its legitimate purpose is to enforce some good lesson by means of picturing experiences possible to humanity. Of course there are all kinds of dramas, as there are all kinds of experiences which may be enacted, and if we wish to accomplish good we must choose the best dramatic literature for our study and practice. The terms "dramatic" and "theatric" are often confused, so that some persons, when dramatic work is mentioned, at once jump to the conclusion that anyone undertaking it is intending to become a professional actor, and such persons are apt always to associate in their minds the theatre and the drama.

Now, while it is true that dramatic literature is usually peculiarly adapted to representation on the stage it does not by any means follow that all such must be so enacted. There are many kinds of literature which are strongly dramatic in character which at the same time are not well adapted to stage representation. Many dramatic poems and prose selections are included in this category. Some dramas also come under this head; for instance, most of Robert Browning's dramas, although originally written for theatrical enactment, have never been popular on the stage. They are dramatic, in that they depict human life with unusual truth and vividness; they are not theatrical in that the scenes and situations, the dialogue and dramatic climaxes are not characteristically adapted to being set forth on the stage. We can say, then, that Browning is essentially dramatic, but not theatric in any

great degree. Indeed, it is the dramatic or human element in Browning which gives his work its great power to uplift and inspire humanity.

Somewhat in contrast, and yet strikingly similar in many ways, is the work of Shakespeare. He is none the less dramatic than Browning, but vastly more theatric in form. Shakespeare was a playwright, actor and stage manager, as well as a dramatist, and all his dramas were written with the theatre and audience in mind. Everything was adapted to representation on the stage, and it is impossible to fully appreciate him until we have seen his plays enacted in the midst of their natural surroundings, the scenery and effects of the stage. Indeed, I doubt how fully we can appreciate his work until we ourselves have assumed the characters, and until through our blood and nerves have passed the thoughts, feelings and purposes of the characters he created. To sit and read or to see the plays enacted is one thing, and valuable training it is, but to actually *live* the characters, to be for the time a participant in the scenes and situations, to share in your own experience the joys and sorrows, the humor and the pathos of the living characters which you impersonate; this gives a reality and depth of experience which can be gained in no other way. We know, understand and remember what we have lived even better than what we have seen or heard; and this ability to live the life of others, to see the world through other eyes than our own, is best and most quickly acquired by practice in dramatic art.

One of the chief reasons why we are narrow, bigoted and one-sided in our ideas and opinions is that we have only one outlook upon life and humanity, and that is the pinhole of our own limited experience. In order that we may become more charitable and considerate toward our fellow men, in order that we may deal more justly with the world, in order that we may ever grow toward higher and greater knowledge of truth, it is necessary that our field of experience shall be enlarged as much as possible.

One of the very best, I believe *the* best, means of thus enlarging the vision of our experience is to cultivate the ability of looking at the world as other people see it. This is most effectually accomplished by developing the dramatic instinct—that power which enables us to take on, for the time, the personality of another, and to live his life, think his thoughts, adopt his manner of speech and dress, in short, to see life as he sees it. Then can we fully under-

stand that person's view and judge intelligently regarding his conduct. By such practice as this will we enlarge our own personality and become more universal in our sympathies and judgment. For lack of this intuitive insight into the heart of humanity are we continually misjudging our fellow men and exhibiting our own ignorance, unkindness, and limitations. We believe that we should love all men as our brothers, but if we lack the ability to look at life through their eyes, how can we fully understand them, and will not misunderstanding lead to lack of appreciation, lack of appreciation to indifference, and indifference to absence of love? Thus we see that the dramatic instinct may be used to develop that greatest of all treasures of the character—the corner-stone of all ethical and spiritual growth—love for others.

It would seem that this were enough to commend such study and practice to any earnest heart; but this is only one argument in its favor. If time permitted, we might continue almost indefinitely. We might take up in detail the activities of the human mind and show the possibilities of growth in each by this means. We can only mention in passing one or two and leave the reader to think out others for himself.

Let me make myself clear as to my attitude regarding dramatic and theatric work. I believe that they both have their place in education, and that the value to be attached to them depends entirely upon the way they are taught and the class of literature studied. There are dramas *and* dramas; plays *and* plays. A drama or play of high order, representing the best literature, presented in good taste, is an education in the best sense of the word, not only to those who participate in it, but also to those who witness it, as well as to the community at large.

I do not mean to say that it is at all desirable that students should become "play actors" in the professional sense. Far from it. Far be it from me to advise such a course. I know too well the life and associations of the stage to encourage any such attitude. Not that there are not many noble characters on the stage. Theatrical history, past and present, bears ample testimony to the fact that there have been and are many fine men and women among professional actors; but the temptations are so many and the chances of success so few that the outlook in that line is not bright.

But what I do believe in most heartily is the study of the drama, not only in its literary sense but also in the sense of en-

acting the scenes and assuming the characters in the best dramas and plays, as an educational practice, not as a professional career.

By this means the imagination is trained, the intellect is sharpened, the judgment is balanced, the logical powers are brought into play, the artistic sense is educated, the moral sentiment is elevated, the humanitarian qualities of mind and heart are enlarged and deepened.

All progressive educators, not only in this country but abroad also, enthusiastically acknowledge the educational value of such work when rightly pursued, and nearly every large educational institution, private or public, provides for such training in its curriculum. It can be made one of the most helpful factors in any scheme of education which aims at the development of a larger and better manhood and womanhood.

F. A. METCALF.

COMMON ROADS.

IN MANY localities it will be impossible to build permanent macadam roads for years to come and the practical man is interested in the problem of improving the common "dirt" roads. The present wretchedly poor and unsatisfactory condition of the average road is due to faulty construction in the beginning and ignorant repairing since. It not infrequently happens that new roads are built by men who do not understand the first principles of road construction, and the annual repairing is supposed to be such a simple matter that any one can attend to it. As a matter of fact, however, the proper construction and maintenance of highways requires engineering skill of no mean order and men of ability have made it their life work.

Our own country is, perhaps, the only one of the civilized nations that does not appreciate the necessity of first-class highway engineering.

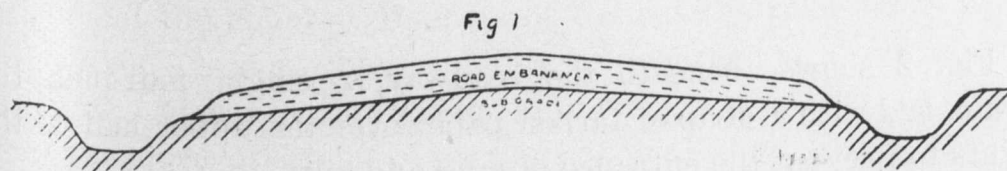
Although the details of road construction, such as grades, slopes, surfacing, etc., vary with the soil and locality, yet there are certain fundamental principles which *must* be observed. The first of these is *drainage*. It should be most forcibly impressed on the minds of all who have to do with the construction or repair of roads, that *drainage* is the main consideration.

Dirt roads never *wear* out—they wash out. Roads are sup-

posed to be properly constructed if they have a small trench on each side and are crowned a little in the center with loose dirt. Seldom are grades set for the side ditches that they may quickly discharge their water, and *never* are the roads rolled.

Before proceeding further, it may be well to state that both the road-grader and the road-roller are absolutely essential to good work on dirt roads. The first is in general use and most supervisors know that with a grader they can do more work and better work at less cost than by any other method. Rollers, however, are seldom used on country roads, and yet good construction and repairing are impossible without them. A three or four ton roller of large diameter will do more towards improving roads than any one thing except good drainage. Horse-rollers, with arrangements for changing the ballast, can be purchased at a cost not to exceed one hundred dollars per ton.

In constructing new dirt roads, the surface should be carefully grubbed and all brush, stumps, rocks and vegetable matter removed. The resulting holes should be filled with good earth, brought to a surface and tamped. Poor or unsuitable material should be replaced with firm earth and this sub-grade should be crowned and rolled—rolled until thoroughly compacted. Bumps or depressions, appearing during the rolling should be leveled up and the surface left smooth and hard. Upon this sub-grade should be built the upper embankment or roadway proper. Fig. 1, shows a method of construction suitable for good earths.



The side ditches will ordinarily furnish sufficient earth for the upper embankment, but if not, it can be taken from borrow-pits close at hand. The roadway should be brought to the required height and width with clean earth and should be carefully harrowed, leveled, and rolled. As the rolling progresses the irregularities should be smoothed as they appear and the weight of the roller should increase, till finally the top surface is being rolled with the heaviest weight at command.

This upper embankment should be carried up with proper

crown, in layers not exceeding nine inches, and should vary in depth according to the soil and the grades. The amount of crowning necessary also varies with the soil, but no more should be given than will cause water to flow quickly to the side ditches.

In ordinary soils side drainage is all that need be attempted, provided the ditches actually drain. Usually the side ditches are choked at the outlet, lack proper fall, or are grown up with weeds. They collect the water into long narrow ponds on each side of the highway and work positive injury to the road-bed. Side ditches should have a fall of one foot in a hundred if possible, should be smooth and clean, and most important of all, should have an outlet. In order to drain the road it is necessary that the water should get away and the ditches must be carried on to some place of discharge. As strange as it may seem, this point is often neglected.

With some soils and in some places, surface drainage alone will not suffice and one or more drains must be laid *beneath* the roadway. These should have a fall of one foot per hundred and are to be connected with the side ditches at short intervals, say seventy-five to one hundred feet. The sub-grade should slope downwards to the center drain and should be thoroughly rolled and compacted.

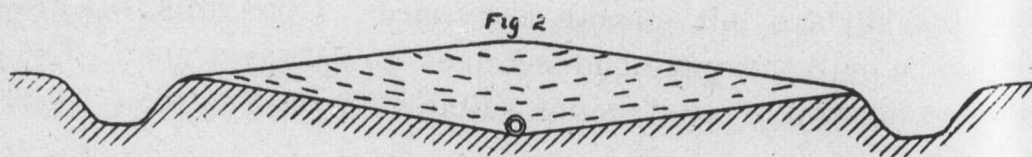
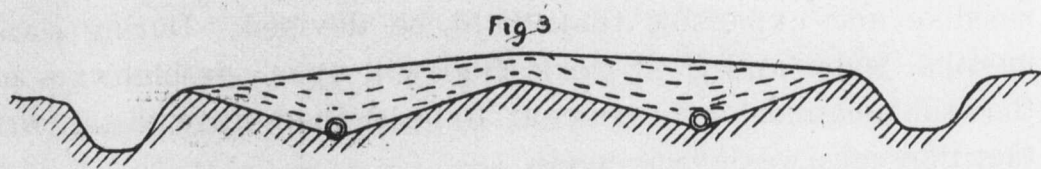


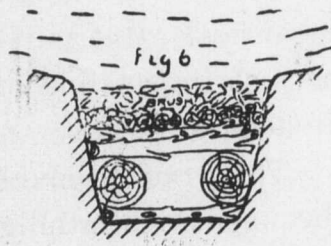
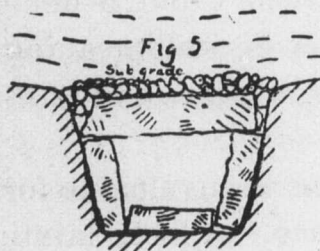
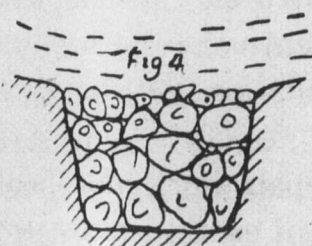
Fig. 2 shows, beneath the roadway, a single four-inch tile drain, laid with a strip of tarred paper over the upper half of the joints to prevent the entrance of mud and silt.

The drain-tile ditch is sometimes filled with broken stone, which also extends in a thin layer up the slopes of the sub-grade to facilitate drainage. Three or four inches of brush, straw, or cornstalks can be used for the same purpose. None of these are necessary, however, and the drain-tile can just as well be filled with earth if the joints are protected as indicated.

Since sub-drains have small effect for more than ten feet on each side, it is sometimes necessary to have two drains, as shown by Fig. 3.



Should tile prove too expensive in any locality, the drains proper may be made in a variety of ways. Rounded stones may be used, as in Fig. 4., or flat rocks, as shown by Fig. 5., or even the brush drain, as in Fig. 6.



Tile drains are much to be preferred, though a very good drain can be made after the plan of Fig. 5 in those sections where suitable rocks abound.

It should not be forgotten that these drains are to be connected at frequent intervals to the side ditches and that the purpose of all drains is to take the water *away* from the road.

REPAIRING.

In the well-settled sections of the country, road repairing is probably a more important subject than road construction. Throughout the country districts of Kansas the road tax is paid by the labor system, which can only be regarded as a relic of the dark ages. It has been abandoned in foreign countries, is obsolete in the more progressive portions of the United States, and is the most expensive as well as the most ineffective system of repairing the highways. All road tax should be paid in money and the repairing should be done by contract or under the supervision of a competent foreman. One-half of the cash road tax could be devoted to the purchase of proper machinery and tools and the remainder would accomplish more in the way of repairs than the total road tax does, under the present system. The cash road tax may be regarded as the first step towards improving our roads.

Furthermore, the method of turning out once a year, to repair the damage resulting from a year of neglect, is the most unbusi-

nesslike and expensive that could be devised. During eleven months, water and frost work their will upon our highways and then the neighborhood turns out to heap them up with soft earth that they may wash away again.

Common business sense would indicate that roads should be repaired daily and not allowed to get into such condition that extensive repairs are necessary. One man and team tending the roads every working-day of the year can keep in repair a surprising extent of a highway, and can do it cheaper than by the present method. This is not theory but a demonstrated fact in many localities. But as it now is, well-meaning men make the highway almost impassible once a year, and our roads are getting worse instead of better.

The grading-machine is invaluable for repair work but should be used with intelligence. A loose mixture of earth, leaves, sod, weeds and sticks should not be scraped to the center of the road and called "grading." The weeds and brush should be cut and burned, the stones removed, and only clean earth graded to the center of the highway. After the road-bed has been crowned and smoothed, it should be rolled and rerolled till hard and firm. The necessity for rolling cannot be too strongly dwelt upon, and yet it is almost universally neglected. Ploughs and scrapers should never be used except for very heavy cuts and fills. The grader and the roller are the all-important tools.

The side ditches should be thoroughly cleaned and kept open through the culverts and outlets. Proper care should be taken that the silt from the ditches is not placed where it will be washed back by the first rain. All brush and weeds should be cut and burned and trees and bushes should be prevented from encroaching upon the side lines.

The proper maintenance of roads is not a difficult matter, but under the present plan of paying road tax in labor the supervisors have small chance of doing efficient work. It is to be hoped that Kansas will maintain her reputation for progress and revise her road laws at an early date.

J. D. HARPER.

DO GOOD ROADS PAY?

MANY persons have not given the question of good roads the serious consideration that its importance deserves. Especially is this the case in the country, where the farmers have heretofore been obliged to stand the entire expense of road building or improvement. They have naturally viewed with suspicion an agitation for better highways, which may mean largely increased taxes. Many look upon good roads as a desirable convenience but either ignore or fail to comprehend the money side of the question.

Leaving out of consideration, temporarily, the matter of paying for permanent roads, we have before us the question, Do good roads pay—would they benefit the farmer financially? To properly answer this question we should know what it is costing the people of the United States to haul their produce and what it costs the people in other countries.

The federal government has been collecting statistics on this subject for years and the results of the investigations have been published far and wide. It should be borne in mind that these figures are entirely impartial and as reliable as the most careful corroboration can make them.

The total wagon transportation in the country amounts to 500,000,000 tons each year. The average distance freight is hauled in wagons is eight miles and the average cost of hauling one ton this distance is two dollars. On this basis the hauling done in wagons costs us \$1,000,000,000 per year. This sum seems too large for accuracy, but it has been determined by independent investigators whose figures substantially agree.

We are now interested in knowing what this hauling *should* cost. Carefully compiled statistics show that in England and European countries the average cost of hauling a ton eight miles is eighty cents, or \$1.20 less than our cost.

To put the figures in a different shape, it costs the American farmers twenty-five cents per ton per mile to market his crops, while his foreign competitor pays but ten cents to haul a ton a mile. If we could haul in a wagon as cheaply in this country, there would result an annual saving of \$600,000,000. If there is the slightest hesitation about accepting these figures they can be cut in two and we have still a saving of \$300,000,000 per year—a sum worthy of our most earnest consideration.

There is not the slightest doubt but that the cheaper cost of wagon hauling in foreign countries is due to their better highways and to the universal use of wide tires. The average load, abroad, for two horses is four tons, exclusive of the wagon, and this is the all-day load, six working days per week.

We are wasting about \$600,000,000 each year on account of our poor roads, and this excessive cost of our primary or wagon transportation constitutes a steady tax on our farmers and our commerce. American producers are handicapped to that extent in the markets of the world.


The saving of this money would enhance the profits of the farmer and increase the trade of the towns. But in addition to the direct saving of this "mud tax," as it has been called, there are many other ways in which good roads pay.

Commerce would be benefitted if crops could be moved regularly and at all seasons of the year. Farmers could promptly take advantage of favorable prices, and perishable crops could be marketed expeditiously and with certainty.

It is not possible to set a money value upon the gain to the farming community that would result from permanent highways, but undoubtedly the improved social and educational advantages would do much towards solving the vexed question of how to keep the young men on the farm.

And when to all these features we add the increase in real-estate values the conviction is forced upon us that good roads *do* pay; that first-class, permanent highways are the best investments the farmers can make, and that it is *now* time for the citizens of Kansas to lay the foundation for future prosperity.

J. D. HARPER.



**WEBSTER'S
INTERNATIONAL
DICTIONARY**

WEBSTER'S INTERNATIONAL DICTIONARY

**GET
THE
BEST**

A

Ω

NEW EDITION

JUST ISSUED

NEW PLATES THROUGHOUT

Now Added **25,000 NEW WORDS,** Phrases, Etc.

Rich Bindings • 2364 Pages • 5000 Illustrations

Prepared under the supervision of W. T. Harris, Ph.D., LL.D., United States Commissioner of Education, assisted by a large corps of competent specialists.

BETTER THAN EVER FOR GENERAL USE

Also Webster's Collegiate Dictionary with Scottish Glossary, etc.

"First class in quality, second class in size."

Specimen pages, etc., of both books sent on application.

G. & C. MERRIAM CO., Publishers, Springfield, Mass., U. S. A.

THE INDUSTRIALIST.

Published weekly during College year for \$1 per annum; students and alumni, 50 cents.

KANSAS STATE AGRICULTURAL COLLEGE.

Manhattan, Kansas.

☆ ☆ ☆

PRES. E. R. NICHOLS..... Editor-in-Chief

PROF. J. D. WALTERS..... Local Editor

PROF. J. T. WILLARD..... Alumni Editor

BOARD OF REGENTS.

HON. E. T. FAIRCHILD, President.... Ellsworth

HON. J. S. McDOWELL, Vice-President,
Smith Center

HON. W. T. YOE, Treasurer..... Independence

HON. WM. HUNTER, Loan Comm'r, Blue Rapids

HON. MRS. SUSAN J. ST. JOHN..... Olathe

HON. CARL VROOMAN..... Parsons

HON. J. M. SATTERTHWAITE..... Douglass

PRES. E. R. NICHOLS, Sec. *ex-officio*.

LOCAL NOTES.

Professor Goodell expects his family to arrive this week.

Prof. Minnie A. Stoner will address the Ladies Club, of Wellington, on November 16.

Captain Leicester, of Manhattan, acted as judge at the competitive drill of the cadets, and spoke in high terms of the work of the battalion.

The Misses McKeen, Strite, Failyer, Branstein, Rose, Rigg, Agnew and Criss attended the Y. W. C. A. at Topeka three days of last week.

The Manhattan Live Stock and Sales Company announce that the next regular monthly sale of stock will be held at their arena here on Saturday, November 3.

Miss Minnie McCleary has resigned her position as stenographer in the Mechanical Department, and accepted a similar one in the office of C. P. Dewey, at Manhattan.

The College football team went to Wichita on Monday of last week to battle with the eleven of Freemont College and returned in the night with laurel wreaths upon their locks. Score, 11:5.

Assistant Haney left Thursday morning for a second visit to the great Kansas City Live Stock Exhibition. On his return trip he conducted farmers' institutes at Humboldt and Neosha Falls.

Professor Otis has been selling the calves put on experiment last winter and spring and is filling up the calf yards with young calves to be fed for class illustration during the dairy and short-course schools. He will feed fifty head in this work if suitable animals can be procured at reasonable prices.

The third of the monthly stock sales held by the Manhattan Live Stock and Sales Company was held at the company's sale arena Saturday afternoon. Over 250 head of extra fine calves, yearlings and two-year-old steers were sold. Twenty-six head of Nebraska mares and twenty head of high-grade draft horses brought splendid prices. Among the young animals were several thoroughbred white-face bulls. An immense crowd was in attendance and the bidding was spirited.

Applications are coming in daily for winter farmers' institutes. These institutes bring the College before the people of the State better than any other means, and we ask all former students and other friends of the College who have not already arranged with us for institutes to do so at once. An institute brings our experiments directly before the farmers of a community and enables every farmer attending to do better work. It brings the work of the College before the community, and this means more students.

The Experiment Station has received an index to all of the publications of the United States Department of Agriculture relating to animal industry. It is a work of almost monumental magnitude, reaching six hundred seventy-six pages in size. The earliest publications were in 1837. It will undoubtedly prove of immense value as a time saver to investigators, and is of special interest to us as the work of George F. Thompson, superintendent of printing in this institution, 1881 to 1887. Mr. Thompson is now editorial clerk in the Bureau of Animal Industry.

ALUMNI AND FORMER STUDENTS.

Z. L. Bliss, '00, attended the Hall-Lyman wedding. He has a position in the Division of Forestry with Mr. Hall. H. B. Kempton, third-year student 1899, is also one of the force.

J. B. Norton, '97, has returned to take the position of assistant entomologist in the Experiment Station. Mr. Norton has made a specialty of this science for some years, and his knowledge of botany, his unlimited energy and all-round qualifications will make him a valuable man in that department.

One of the prettiest weddings that has taken place in Manhattan for some time was that which united Will L. Hall, '98, and Gertrude M. Lyman, '97, on October 24, at 8:30 P. M., at the First Baptist church. The north end of the church was covered with draperies of white and beautifully decorated with palms, trailing vines and gorgeously colored autumn leaves. The ushers, J. H. Crisswell, Z. L. Bliss, J. M. Westgate, and H. B. Kempton, were followed up the aisle by a little cousin of the bride's, Master Hall, who carried the ring on a silver tray. The bride and her father, Doctor Lyman, came next and were met at the altar by the groom and an uncle of the bride, Rev. Geo. Hall, who performed the ceremony. The wedding reception was held at Hotel Higginbotham, where the parlors and dining-room were decorated with palms and flowers. An elaborate supper was served to relatives and near friends. Brown's orchestra, besides playing the wedding march, furnished delightful music during the reception. Mr. Hall was formerly assistant in horticulture at this College, but is now employed by the Forestry Division of the Department of Agriculture, Washington, D. C. Mrs. Hall occupied a prominent place in the Manhattan musical circles. We regret to lose both of these young people, but unite in sending congratulations and best wishes with them to their new home in Washington, D. C.

The Farm Department during the past week has been weighing and grouping into experimental lots one hundred thirty calves. These calves will be pushed to their full feeding limit and will be marketed in June for baby beef. One hundred head are being fed by the Farm Department in a test of alfalfa and prairie hays, corn, Kafir-corn and soy beans. Thirty head are fed in a co-operative experiment by the Chemical, Farm and Veterinary Departments to test the value of condimental feeds.

The following letter received the past week by the Farm Department shows the kind of young men for which there is a large call: "Can you give me the address of some of your graduates who would be capable of taking charge of a three-hundred-acre farm, about one hundred acres being under plow? The stock consists of sheep, milk cattle, and horses. I want a man who is a practical farmer, acquainted with the conditions in the Missouri valley, and who would be capable of taking full charge."

The exhibit by the Domestic Science Department last Saturday was dainty and tempting. The dishes prepared illustrated how plain food may be wholesomely cooked and delicately served. It was said that the exhibit would have done credit to any showing of artistically prepared dishes from Eastern schools much older in this work than our own. Among the dishes were meat pie with short-cake crust, meat pie with potato crust, potato balls, duchess potatoes, egg vermicelli, baking-powder biscuits, cheese straws, tomato jelly, lemon pie, apple pie with puff paste crust, puff paste patti shells, cup custard with jelly, cream of tapioca with fruit, wheatlet with fruit preserves, mould of coffee jelly, and mould of heston pudding. The various foods prepared were the work of the regular College and short-course classes. The exhibit was arranged by postgraduate students.

Prof. W. A. McKeever, A. M., lately elected assistant professor of English and Philosophy in this College, is a Kansan by birth and education. He was born in Jackson county, thirty-two years ago, and moved with his parents to Jefferson county in 1876, where his youth and early manhood were spent. He entered the profession as a district teacher, but soon became the principal of the Holton high school and afterward for several years the superintendent of the schools of Smith Center. Professor McKeever is a graduate of the Valley Falls high school, of Campbell University, where he earned the degree of A. M., and of the Kansas State University, where he has received the same degree. He has also done part of the work for the degree of Ph. D. at the University of Chicago. He is a self-made man in the strongest sense of the phrase, having paid his way through College as editor of a College paper and as reporter and contributor of daily papers. During one year he sold over 75,000 words of "literary copy." In 1895 Professor McKeever was married to Miss Edith Shattock, of Vandalia, Mo. He comes to this College with high recommendations and will prove a valuable addition to the Faculty of English and Philosophy.

KANSAS STATE AGRICULTURAL COLLEGE

FIVE COURSES OF STUDY.....

Each complete in itself and leading to the degree of Bachelor of Science, are as follows:

- 1—General Science
- 2—Agriculture
- 3—Domestic Science
- 4—Mechanical Engineering
- 5—Electrical Engineering

This Institution

is supported by the General Government and by the State of Kansas, and is designed, by its instruction, to promote the liberal and practical education of the industrial classes in the several pursuits of life.



COLLEGE classes are open to both sexes. Tuition is free in all departments. There is no charge for laboratory supplies. Room and board can be had at very reasonable rates. The yearly expenses, exclusive of clothes and traveling expenses, are between \$100 and \$200. All College laboratories, shops and class rooms are well supplied with needful apparatus and appliances. Practical application is made of the principles learned in the study of the sciences, and thus the College is made a school of applied science.

Domestic Science.

A full course in Domestic Science now in successful operation. The work in the Department of Domestic Science forms an interesting part of the instruction given in the women's course. It is of great practical and disciplinary value.

FOUR SHORT COURSES

Open to students of mature age who cannot, on account of time or money, take one of the four-year courses.

- 1—Apprentice
- 2—Domestic Science
- 3—Dairying
- 4—Agricultural

For catalogue or other information, address

ERNEST R. NICHOLS, A. M., PRES.,
MANHATTAN, KANSAS.

(Cut represents Farm Barn.)

Volume 27.

Number 6.

THE INDUSTRIALIST

ISSUED WEEKLY

KANSAS STATE
AGRICULTURAL COLLEGE

Editor-in-Chief,

Pres. E. R. Nichols

Local Editor,

Prof. J. D. Walters

Alumni and Former Students, Prof. J. T. Willard

Published by
PRINTING DEPARTMENT
J. D. Rickman, Supt.

Historical Society

BOARD OF INSTRUCTION.

- ERNEST R. NICHOLS, A. M.** (University of Iowa), President, Corner Poyntz and Juliette aves
JOHN D. WALTERS, M. S. (Kansas State Agricultural College) North end of Sixth street
 Professor of Industrial Art and Designing.
ALEXANDER B. BROWN, (Boston Music School), A. M. (Olivet). 817 Houston street
 Professor of Music.
JULIUS T. WILLARD, M. S. (Kansas State Agricultural College) 1211 Moro street
 Professor of Applied Chemistry.
ALBERT S. HITCHCOCK, M. S. (Iowa Agricultural College) .. College Hill, 2 miles N. W. of College
 Professor of Botany.
FREDRIC A. METCALF, O. M. Superioris Honoris (Emerson Coll. Oratory) 6th and Poyntz ave.
 Professor of Oratory.
GEORGE F. WEIDA, Ph. D. (Johns Hopkins) 517 Fremont street
 Professor of Pure Chemistry.
HENRY M. COTTRELL, M. S. (Kansas State Agricultural College) College Campus
 Professor of Agriculture, Superintendent of Farm.
MISS MINNIE A. V. NELLIE STONER. (Boston N. S. of H. A.), B. S. (S. D. A. C.) Fourth and Osage
 Professor of Domestic Science, Dean of Women's Department.
JOSEPH D. HARPER, M. S. (Rose Polytechnic Institute) Houston st., between 6th. and 7th. streets
 Professor of Mechanical Engineering, Superintendent of Shops.
EDWIN A. POPENOE, A. M. (Washburn) Seventh and Osage streets
 Professor of Horticulture and Entomology, Superintendent of Orchards and Gardens.
FRANK C. LOCKWOOD, Ph. D. (Northwestern) Corner Fifth and Humboldt
 Professor of English.
BENJ. L. REMICK, Ph. M. (Cornell College) Fourth and Osage
 Professor of Mathematics.
BENJ. F. EYER 512 Houston street
 Professor of Physics and Electrical Engineering.
C. E. GOODRELL, A. M. (Franklin)
 Professor of History and Economics.
MISS HARRIET HOWELL, (Pratt Institute) Corner Poyntz and Juliette avenues
 Superintendent of Domestic Art.
JOSHUA D. RICKMAN, I. T. U. 911 Osage street
 Superintendent of Printing.
MISS JOSEPHINE T. BERRY, A. B. (Kansas University) Sixth street and Poyntz avenue
 Librarian.
B. S. MCFARLAND, A. M. (Miami), Fourth and Osage
 Principal Preparatory Department.
MISS FLORENCE BALL N. E. Cor. Juliette and Fremont streets
 Director of Physical Training.
MISS LORENA E. CLEMONS, B. S. (K. S. A. C.), Secretary Corner Fourth and Laramie
SEPTIMUS SISSON, S. B. (Chicago), V. S. (Toronto) Cor. Manhattan avenue and Moro
 Associate Professor of Veterinary Science and Biology.
D. H. OTIS, M. S. (Kansas State Agricultural College) College Hill
 Assistant Professor of Dairying.
WILLIAM ARCH MCKEEVER, A. M. (Kansas University) 621 Houston street
 Assistant Professor of English and Philosophy.
MISS JOSEPHINE C. HARPER, Instructor in Mathematics Corner Sixth and Pierre streets
MISS ALICE RUPP, (Indiana State Normal), Instructor in English
CHARLES EASTMAN, Cadet Major and Acting Commandant 611 Poyntz avenue
William L. House, Foreman of Carpenter Shop Corner Sixth and Colorado
Chas. W. Pape, M. S. (K. S. A. C.), Ass't in Zoölogy and Ass't Curator Museum, 918 Osage st
R. W. Clothier, M. S. (K. S. A. C.), Assistant in Chemistry, Fremont, between Fifth and Sixth
Margaret J. Minis, Assistant Librarian Fourth and Moro streets
R. H. Brown, M. T. (Kan. Con. of Music), B. S. (K. S. A. C.), Ass't in Music, 817 Houston street
J. M. Westgate, M. S. (K. S. A. C.), Assistant in Botany, Cor. Manhattan avenue and Vattier
May Secrest, B. S. (K. S. A. C.), Assistant in Domestic Art, Cor. Leavenworth and Seventh
Wm. Anderson, B. S. (K. S. A. C.), Assistant in Mathematics, Cor. Humboldt and Juliette ave
Gertrude Barnes, Assistant Librarian Cor. 9th and Moro
Albert Dickens, B. S. (K. S. A. C.), Assistant in Horticulture, Fremont and Manhattan avenue
William Baxter, Foreman of Greenhouses
J. G. Haney, B. S. (K. S. A. C.), Ass't in Feeding and Field Experiments, Manhattan ave and Kearney
Mary Pritner, B. S. (K. S. A. C.), Assistant in Domestic Science Cor. 7th and Leavenworth
Theodore Lindquist, M. S. (Northwestern), Ass't Physics Cor. Fifth and Humboldt
W. M. Sawdon, B. S. (Purdue), Assistant in Mechanics Juliette and Houston
O. I. Purdy, B. S. (K. S. A. C.), Assistant in Printing 1216 Fremont street
Ada Rice, B. S. (K. S. A. C.), Assistant in Preparatory Department Osage and 8th. street
Louis Wabnitz, Foreman Iron Shops 5th and Osage
Henry Van Leeuwen, (Univ. Wis. D. S.) Inst'r in Cheese Making Manhattan and Kearney
E. W. Curtis, (Univ. Wis. D. S.) Instructor in Butter Making
Florence L. Grant (Mass. Normal Art School), Assistant in Drawing Fourth and Osage
A. T. Kinsley, B. S. (K. S. A. C.), Assistant Veterinary Department, Tenth and Kearney sts
Elizabeth Agnew, B. S. (K. S. A. C.), Assistant in Domestic Science, Ninth and Moro streets
Jacob Lund, M. S. (K. S. A. C.), Engineer Cor. Tenth and Kearney
C. Jeanette Perry, B. S. (K. S. A. C.), Executive Clerk Corner Colorado and Fifth
W. R. Lewis, Janitor N. E. corner Main College Building
Archie Huycke, Secretary to President Manhattan avenue and Kearney

THE INDUSTRIALIST.

VOL. 27.

MANHATTAN, KAN., NOVEMBER 6, 1900.

No. 6

HOW TO STUDY A LITERARY MASTERPIECE.

DOUBTLESS hundreds who scan this page are extremely fond of reading, and eager to know how to read the great English classics to the best advantage, yet feel that it will be impossible for them ever to attend college or to receive careful instruction in the study of literary masterpieces. It is to such that I venture, purely as a labor of love, to offer some simple hints in the hope that what has brought so much pleasure and sunshine into my own life—the faithful and loving study of the imperishable literary productions of this and other ages—may prove a like boom to them.

First, then, be it known that genuine works of art are not to be tasted merely; they are to be chewed, swallowed, and inwardly digested. A masterpiece will not yield its full harvest at the first or second reading. Before it will do this it must be read five, ten, twenty times. The very first requisite is a complete mastery of the thought or sentiment of the production in hand. Not a word must be allowed to pass that is strange or obscure. Every new word must be looked up, and the force of every unusual one estimated. All difficulties of thought must be resolved, so that the student may realize clearly and completely the exact meaning of the author.

The sense of a masterpiece being perfectly clear, the next thing is to enter appreciatively into its spirit. It should be enjoyed; should become a vital part of the reader; the very emotions, aspirations and convictions of the genius who penned it should pass over into the mind and heart of him who reads it. It is this that exhilarates, elevates and broadens the soul of the student. It is thus he communes with the noblest spirits and shares with them the purest and most inspiring sentiments of life. No one can sympathetically set forth or interpret the work of a master until he shall have thought himself into the experience of the writer, and vividly reproduced the atmosphere in which he wrought.

But what I have said so far is of a general nature, and it is merely preliminary to the minute and loving study of the text. This more minute study will busy itself with two problems—that of style and that of subject-matter.

By style I mean the manner in which the author expresses his thought. It includes the choice of words, skill and felicity in the use of epithets and phrases, delicacy, variety and precision in the use of figurative language. In art, form—expression—is as important a factor as thought itself. It is an essential. We are irresistibly attracted to some authors by their diction alone. There is a piquancy and charm about individual words, and the person of taste experiences a distinct pleasure in merely conning words and lingering over their vivid or subtle qualities. Words have a history of their own; they carry with them an atmosphere; they import into the present a thousand associations from the past. I delight to scan and to pronounce such words as *rich, chaste, crimson, mellow, superb, splendor, home, love, beauty, noble, sombre, vaunt, mock, proud, austere, strenuous, delicate, elegant, poise*, etc. It has been said of De Quincy's diction that, like a costly silk dress, it is able to stand alone.

Style derives its most subtle quality, however, from exquisite phrasing, the vivid and picturesque employment of epithet, and skill and freshness in the use of figures of speech. Every thought is a sort of disembodied spirit wandering about in the universe, yearning for adequate utterance by tongue or pen. It finds temporary lodgment here and there—like poor Ariel penned in the knotty entrails of an oak—but finds no surcease until at last the man of genius embodies it, with high-born ease, in some felicitous phrase or exquisite figure. It becomes the task and the delight of the student of literature to recognize such passages and feast upon them. Whether they be noteworthy for their precision, their beauty or their vividness and strength, they are alike important to the reader, and should be marked, conned, and estimated. I could, by way of illustration, fill a whole volume with such quotations, but a limited number must suffice. In giving them I find it almost impossible to know where to begin or how to leave off. It is, too, a genuine grief to me to record only fragments; for in almost every case the quotation is a twig plucked from a fragrant, heavily loaded bough.

"The popped warmth of sleep."
 "Music yearning like a god in pain."
 "The glory and the freshness of a dream."
 "There's daggers in men's smiles."
 "His silver skin laced with his golden blood."
 "After life's fitful fever he sleeps well."
 "Dear as remembered kisses after death."
 "Husks wherein the acorn cradled."
 "The air breathes upon us here most sweetly."
 "Like hedge-hogs that lie tumbling in my barefoot way."
 "The winds come to me from the fields of sleep."
 "The innocent brightness of a new-born day."
 "Her sunny locks hung on her temples like a golden fleece."
 "How sweet the moonlight sleeps upon this bank."
 "Look like the innocent flower, but be the serpent under it."
 "With his brandished steel that smoked with bloody execution."
 "Fleet the time carelessly as they did in the golden world."
 "To me the meanest flower that blows can give
 Thoughts that do often lie too deep for tears."
 "I wandered lonely as a cloud
 That floats on high o'er vales and hills."
 "And autumn laying here and there
 A fiery finger on the leaves."
 "But, look, the morn, in russet mantle-clad
 Walks o'er the dew of yon high eastern hill."
 "His virtues
 Will plead like angels, trumpet-tongued, against
 The deep damnation of his taking-off."

However much the graces of style may fascinate him the serious student realizes that in both prose and verse there is a deeper and more abiding interest that solicits his attention—the interest of the thought itself. It is impossible in this article to discuss the problem of the exact function of literature, whether it should be produced with no other object in view than that of yielding pleasure or whether it should be fraught with purpose and instruction. For my own part, I encounter no real difficulty. No piece of literature is great as literature unless it gratify the æsthetic taste; but, on the other hand, no masterpiece possesses the highest charm that does not blend truth with beauty, and moral inspiration with both.

In our effort, then, fully to realize and interpret a piece of literature, much will depend upon the nature of the masterpiece. Some works must be analyzed and estimated by intellectual effort chiefly. The language bends beneath the thought. Truth seeks utterance. The style is chaste, cold, and incisive; there are few

figures of speech, and such as are used are employed for clearness and force rather than for beauty. Other immortal productions make their appeal to the ethical and religious nature. They seek to change character. They make their chief appeal to the will. They seek definitely to bring about some moral reform, to inspire purer conduct, or to influence men to immediate and unselfish action.

Finally, there is a type of literature represented by such poems as "The Rape of the Lock," "The Eve of St. Agnes," and innumerable lyrics, such as "Tears, idle tears," "The bugle song," "The tide rises, the tide falls," and "The bells of Lynn," that minister to the æsthetic and emotional nature purely, and must be interpreted, if at all, as things of beauty—rare and evanescent—but none the less a joy forever. Such lyrics as "Tears, idle tears," "Break, break, break," and "Crossing the bar" cannot be analyzed or accounted for by intellectual processes. They are perfect pictures in verse. The word painting, the melody, and the haunting, almost painful spiritual fragrance that they breathe forth, while elusive except to the emotions, are at the same time an essential element of the subject-matter.

In conclusion I cannot forbear referring to a few classics that fulfill in every particular the demands of literary art. In these masterpieces the true, the beautiful and the good are blended in almost perfect proportion. Of course Shakespeare's "The Merchant of Venice," "Macbeth," and "The Tempest" come instantly into our minds. In prose I may mention "Ivanhoe," "Silas Marner," and "The Scarlet Letter;" among the familiar poems since Shakespeare's time, Milton's "Comus," Goldsmith's "The Deserted Village," Tennyson's "Enoch Arden" and "In Memoriam," and Browning's "Saul" and "Andrea del Sarto." Where I name one, ten clamor for a place, but the student who reads the above list will find his own way into other fabled regions of wonder and beauty, I feel sure.

FRANK C. LOCKWOOD.

The thirty-third annual meeting of the Kansas Academy of Science will be held at Topeka, Friday and Saturday, December 28 and 29. All members expecting to present papers should send their titles to the secretary, Prof. D. E. Lantz, Alma, Kan., not later than November 20, in order to have the titles appear in the program, which will be issued about December 1.

WHAT PAPERS SHOULD THE KANSAS FARMER READ?

NOW that the days are shortening and the evenings becoming longer the Kansas farmer and his family are again finding time to read and the question is, What will pay them best to read in their own line of work? The Farm office of the Kansas State Agricultural College receives regularly one hundred five farm papers, and through our acquaintance with these we may be able to help farmers who are not acquainted with the best farm publications.

Every farmer in Kansas, no matter what his line of work, should read the *Kansas Farmer* (Topeka, Kan.). Its special value comes from its extensive treatment of local conditions and methods. Men who are making money in various lines of farming in all parts of the State contribute to its columns, and the Kansas farmer who carefully reads this paper will be in close touch with the successful farmers of the State, and through their experiences can make money by using methods which have proved successful with them and save money by avoiding the mistakes which they report.

Every Kansas farmer should read *Wallace's Farmer* (Des Moines, Iowa). This is one of the best edited farm papers in the United States. Its work in crop production is of special value to the Kansas farmer, being both thoroughly practical and scientific. *Wallace's Farmer* has a wide circulation in Kansas and it pays special attention to the particular problems of climate and local conditions which the Kansas farmer has to solve.

The *Breeder's Gazette* (Chicago, Ill.) is the leading stockman's paper of the world. Its feeders' column, by Professor Henry, will help every feeder of cattle, hogs or sheep to increase his profits, no matter how small or how extensive his business may be. The feeder needs the *Breeder's Gazette*, no matter whether he feeds a dozen head of animals or ships his fattened stock by the train-load. We know of no breeder of pure-blood stock of any kind who is not a reader of this paper.

The writer has met dairymen from every state in the union, from as far east as Russia and as far west as Australia. In every case where high yields and large profits had been secured the dairyman was a careful student of *Hoard's Dairyman* (Fort Atkinson, Wis.). Any Kansan who milks one cow or more will

find it profitable to take this paper. The stockman or feeder who is interested in ensilage should also take *Hoard's Dairyman*, as it gives regularly the latest and most complete information on silos and ensilage.

The *Dairy Age* (Beloit, Kan.) is edited by T. A. Borman, the Kansas young man who made \$81 per cow a year from his dairy herd, the highest record yet reported. Mr. Borman is as good a writer as he is a dairyman, and the *Dairy Age* is practical, thoroughly adapted to Kansas conditions, and written in a breezy style. It should be in the hands of every Kansas milk producer and deserves a wide circulation throughout the Western States.

Colman's Rural World (St. Louis, Mo.) is of special value to Kansas farmers interested in new forage crops and crops for increasing the fertility of the land. It gives the experience in growing soy beans and cow peas of farmers scattered over a wide section.

For the Kansas farmer who wants to produce eggs to sell or fowls for meat *Farm Poultry* (Boston, Mass.) is far ahead of all other poultry papers with which the writer is acquainted.

The seven papers mentioned above are the ones selected, after regularly reading one hundred five farm papers, as being best adapted to the requirements of the Kansas farmer, and there is hardly a farmer in the State but would find it profitable for his family and for himself, both in cash and comfort, to take the entire list.

Many Kansas farmers can afford to take eastern farm papers as well as those specially adapted to this State. When it can be afforded, this will pay as the eastern papers will give an insight into methods of marketing and demands of eastern markets. The hustling Kansas farmer can get many ideas from eastern papers of intensive methods as they are applied on the little eastern farms that he can modify and apply with profit to his large fields and herds.

The editor of the *Rural New Yorker* is the kind of a man that Kansas farmers like. Born on Cape Cod, he made the money to go through College by herding sheep in Colorado. Graduating from the Michigan Agricultural College when that was the leading farm school, he started a farm paper in Mississippi, and after nearly starving there he went to New York and began work on the *Rural* at wages that just paid his board. His good work se-

cured gradual promotion until he is now editor-in-chief and the *Rural New Yorker* is such a paper as you would expect from an editor endowed with a large measure of practical sense and trained in the way mentioned. The *Rural New Yorker* (New York) is a strictly eastern farm paper, but will pay every Kansan who can afford it to take it.

The *Country Gentleman* (Albany, N. Y.) makes a specialty of agricultural news—the meetings of agricultural bodies, the movements of prominent agriculturists, legislative work affecting farmers, etc. In this line it is superior to any other paper.

The *Practical Farmer* (Philadelphia) contains each week articles from T. B. Terry and Prof. W. F. Massey, and what these men have to say can be used in money making by the Kansas farmer.

All the papers mentioned have features of special value to Kansas farmers. Besides these there are many other good general farm papers, such as the *Live Stock Indicator*, and its twin the *Iowa Homestead*, *Farmers' Advocate*, *Ohio Farmer*, *Farm Journal*, *National Stockman*, *American Agriculturist*, with its many editions, *Farmers' Tribune*, *Prairie Farmer*, and others. If a farmer is interested in butter making it will pay him to take *Chicago Dairy Produce*, *Dairy and Creamery* (Chicago) and *Western Creamery* (San Francisco), all good dairy papers. The *Southern Farm Magazine* (Baltimore) is a good paper for those who want information on farming in the South.

How much can a Kansas farmer afford to spend for farm papers? No farmer, no matter how small his farm may be, can afford to spend less than ten dollars for farm papers. If he reads them with judgment he can save this amount or more by using what he learns from them in feeding a single bunch of steers or hogs or in selecting the seed for a single crop. He can save it by avoiding the mistakes others have made and reported in these papers. The writer saved \$400 in a single month from advice given in one issue of a paper that was not considered even worth listing in this article. In a recent visit to a dairy herd we saw an almost perfect cow from which the owner said that he only sold \$12 worth of milk the past year. A careful reading of *Hoard's Dairyman* would have enabled him to get \$50 or \$60 a year from this cow with no additional expense for feed. This cow was being fed an abundance of feed—feed which did not contain milk-making material. The average Kansas farmer can profitably spend \$20 a year for

farm papers and get his money back every month if he uses intelligently what he reads.

Almost any farm paper will take subscriptions for others, giving club rates, and where several papers are taken together in this way a third or more can be saved in the cost. H. M. COTTRELL.

NEEDS AS WE FOUND THEM.

I HAD long wondered just what a farmers' institute was, how they were conducted and what good they really could be to the farmers, but when, through the kindness of the committee, I was given the privilege of making a tour of the eastern part of the State in this self same work I was amazed at the interest taken by the country people for the better development of our State; her soil, her crops, her stock, and, last but not least, her sons and daughters. The two days' meetings, the hundreds of people that attended, the pride with which they exhibited their grains, their vegetables, yes, and their flowers and needle-work, for the Kansas mothers and daughters keep even pace with their lords in whatever goes to build up the homes of our State; all show the zeal and enthusiasm which is fast taking hold of our farmer friends, and point to the star of success which awaits our nation when it shall be ruled by pure-minded, country-bred men and women who have at heart the interest and welfare of the homes of our people, and when eligibility to office will depend not on party politics but on ability to serve his country.

What we need, then, is not to *interest* the farmers but to point the already interested to the advantages the State affords along practical, scientific and educational lines. Scores of boys and girls are to be found all over the State who might just as well be in college as not, if the parents had confidence enough in the heads of the different schools and the professors in charge to feel that their sons and daughters would be looked after and cared for. In speaking with the mother of three bright girls, she replied: "Yes, my girls need an education, but I hate to let them get away from home, for I can't look after them. Anyhow, you know college is a bad place for boys and girls; they are so apt to get into mischief." To be sure they are, but no more in college than many other walks in life; and what they need to learn is that the

board of instructors here is a body of noble men and women employed by the State to look after not simply their own interests but those of the boys and girls intrusted to their charge, and since they can not or will not come to college and get acquainted, then let the college go to them; show them that this is *their* school, supported by every tax-payer in the State, and that they are paying for something they are not getting when they fail to take advantage of the opportunities offered here.

A man told me once that he hated to send his boy to college because he was so "green." What that man needs to know is that that is the kind of boys the college wants. Green fruit can always be used to a better advantage than that which is over-ripe.

We need also to let the people know what we have in the way of buildings, equipments, etc. Think of a boy coming here and stopping at the high-school building or the M. E. church thinking he had found the college! yet this has actually occurred within the last year. Of course, it wasn't the fault of the boy.

Then, too, we need to let the people of the State know what is being done for the student who takes a course here; that the training is practical; that he is fitted not only for making his way in life from a financial point of view but is also better fitted for a home-maker and home-keeper; being trained so as to enjoy the so-called "drudgery" of daily routine, since the knowledge of the different things used affords food for the mind while the trained hands are preparing the food for the body. His study of plant and animal life enables him to come in closer touch with nature and nature's God, and the wild flower that buds and blossoms at his door, or even the tiny worm that crawls in the dust at his feet, has a significance for him and calls up a train of thought that the uneducated mind could not dream of. His work in chemistry and geology reveals to him the hidden mysteries in inanimate nature and enables him to hold communion with the very stones themselves. His history and literature brings him in touch with the illustrious men of remote ages and invites him to live and enjoy not only the present but also the past as well. His mathematics disciplines the mind and prepares him for more perfect concentration of thought. His physics enables him to measure the various physical forces in nature, while his psychology leads him to investigate the unfathomed mysteries of man's moral nature and measure the possibilities of the immortal soul. His oratorical

training gives him an easy and graceful manner of imparting to others the knowledge he possesses, thus making him more interesting as well as more helpful to those with whom he comes in contact, while music and drawing tend to more fully develop the æsthetic side of his being and call forth admiration for the good, the true, the beautiful in all things.

The farmer boy or girl with such a training as this is able to say with one of Shakespeare's characters:

"And this, our life, exempt from public haunts,
Finds tongues in trees, books in running brooks,
Sermons in stones, and good in everything:
I would not change it."

Yet this is only what a student who has completed the regular course here is capable of.

ELIZABETH J. AGNEW.

The *Capital* for October 28 has a long article concerning the mission of Walter T. Swingle to Algeria, and prints a picture of him which bears the faint resemblance to the original that newspaper portraits usually possess. Mr. Swingle is to travel extensively in the Algerian Sahara to ascertain the means by which the fruit of the date palm is brought to perfection, this being a secret of the Arabs at present. He is also collecting a considerable number of varieties of this palm for trial upon the experiment farm of the Department of Agriculture, which is located at Tempe, Arizona. Mr. Swingle will also attend to some other matters for the Department of Agriculture, and his trip is expected to extend as far as Asia Minor.

The *Kansas Farmer* is constantly placing this College under new obligations. Its last issue contains a lengthy write-up of our work in agricultural and scientific lines. The article is illustrated with halftone engravings of the different buildings and departments. We shall cull a few paragraphs for our next number.

The Manhattan Baptist church voted last Sunday to tender a unanimous call to Rev. Thomas M. Rickman to their pastorate, and we understand that he has accepted it. Reverend Rickman is a brother of Supt. J. D. Rickman, of the College Printing Department.

THE INDUSTRIALIST.

BOARD OF REGENTS.

*Published weekly during the College year by the
Printing Department of the*

KANSAS STATE AGRICULTURAL COLLEGE. Manhattan, Kansas.

☆ ☆ ☆

PRES. E. R. NICHOLS.....Editor-in-Chief
PROF. J. D. WALTERS.....Local Editor
PROF. J. T. WILLARD.....Alumni Editor

HON. E. T. FAIRCHILD, President.... Ellsworth
HON. J. S. MCDOWELL, Vice-President,
Smith Center
HON. W. T. YOE, Treasurer.....Independence
HON. WM. HUNTER, Loan Comm'r, Blue Rapids
HON. MRS. SUSAN J. ST. JOHN.....Olathe
HON. CARL VROOMAN.....Parsons
HON. J. M. SATTERTHWAITE.....Douglass

PRES. E. R. NICHOLS, Sec. *ex-officio*.

LOCAL NOTES.

Applications for ten farmers' institutes were received in one day last week.

Professor Lockwood will occupy the Presbyterian pulpit during the absence of Reverend Hood, for a few Sundays.

Professor and Mrs. McKeever are rejoicing over the arrival of a big, bouncing baby boy. The INDUSTRIALIST congratulates.

Seventeen thousand copies of the farmers' short-course and dairy-course circulars will be mailed next Tuesday and Wednesday.

Prof. J. D. Walters will deliver an address at the meeting of the Swiss-American Society of Northern Kansas, to be held at Marysville, November 17.

Professor Popenoe went to Columbus, Kan., last week to inspect nursery stock previous to its shipment into states quarantined against the San Jose scale.

A number of pupils of the Junction City schools visited College Friday, October 27. They were accompanied by two of their teachers, Professors Detmore and Humphrey.

Professor Metcalf, assisted by Mr. and Mrs. R. H. Brown and Mr. Fred Fockele, will give a recital at Ashland schoolhouse, on November 9, for the benefit of the church.

The Michigan Agricultural College adds a Kansas boy to the number of its teachers, Mr. Alfred Parrot, of Lawrence, a brother of P. J. Parrot, being elected assistant in mathematics.

Our boys were completely defeated in two football games last week. The Normals, of Emporia, beat them 29 to 0, and the 'leven of Ottawa University 28 to 0. What's the matter, anyhow?

C. M. Dole, of Dolespark, has written that he will take the second year of the farmers' short course. S. H. Pearce, of Stockdale, will take the horticultural work of the second year of the farmers' short course.

The mid-term examinations were held last Saturday and the teachers are busy with the examination papers and grade books, while the students are anxiously awaiting the verdict of the stern jury—the committee on grades and failures.

The College is now receiving one hundred three farm papers regularly. They are on file for the use of students in the library room of Agricultural Hall, and are constantly being consulted by the students of the Agricultural course.


Prof. A. B. Brown reports the following assignment in the Musical Department for the present term: Piano 63, organ 24, mandolin 30, guitar 34, violin 26, banjo 3, cello 2, piccolo 2, college band 28, b band 25, college orchestra 17, instrumental pupils 454, notation and singing 316. Total 570.

November 1 the Farm Department started a test of the value of condimental feeds for dairy cows. Twenty head of cows are used in the test. The cows are closely balanced, one lot giving 247 pounds of butter fat in October and in the other lot 248 pounds. Acme feed will be used in this interesting trial.

The total registration of voters of Manhattan this fall is nine hundred fifty. Multiplied with five, the usually assumed factor, this number will give the city a population of 4750, which is probably below the real number, since only very few of the eight hundred or nine hundred students have the right to vote here.

The baton with which Professor Brown directs at the chapel exercises was brought from the Philippines and was presented to him by Lieut. Philip Fox, of the Twentieth Kansas. It is of more than ordinary value on account of its history. It was made from the mast of the Spanish vessel, *Reina Cristina*, one of the fleet which was destroyed by Dewey in Manila Bay, on the famous morning of May 1, 1898. — *Republic*.

Despite poor weather and almost impassible roads the attendance at the lecture of Dr. James Hedley, Monday evening, October 29, was all that could be squeezed into the chapel. The Doctor was introduced by student H. T. York. His lecture, "The Sunny Side of Life," is certainly a literary gem and his delivery masterly in every respect. The second number on the program of the College lecture course will be a lecture by J. P. Dolliver, of Iowa, November 16.



**WEBSTER'S
INTERNATIONAL
DICTIONARY**

WEBSTER'S INTERNATIONAL DICTIONARY

NEW EDITION **JUST ISSUED**

NEW PLATES THROUGHOUT

Now Added **25,000 NEW WORDS**, Phrases, Etc.


Rich Bindings • 2364 Pages • 5000 Illustrations

Prepared under the supervision of W. T. Harris, Ph.D., LL.D., United States Commissioner of Education, assisted by a large corps of competent specialists.

BETTER THAN EVER FOR GENERAL USE

Also Webster's Collegiate Dictionary with Scottish Glossary, etc.
"First class in quality, second class in size."

GET
THE
BEST



G. & C. MERRIAM CO., Publishers, Springfield, Mass., U. S. A.

WEATHER REPORT FOR OCTOBER.

A warm month, with rainfall, cloudiness and wind nearly normal. The rain was poorly distributed, nearly all falling during the last week of the month.

Temperature.—The mean temperature was 63.05°, which is 8.67° above normal. There has been but one warmer October in the past forty-two years. The highest temperature was 92° on the 4th; the lowest, 33° on the 17th—a monthly range of 59°. The greatest daily range was 43° on the 12th, the least 5° on the 29th. The mean daily range was 23.65°. The warmest day was the 4th, the mean being 82°; the coolest the 8th, the mean being 51°. The mean at 7 A. M. was 53.16°; at 7 P. M., 62.42°. The mean of the daily maxima was 74.87°; of the daily minima, 51.22°.

Cloudiness.—The per cent of cloudiness was 33, which is normal. The per cent at 7 A. M. was 46.8; at 7 P. M., 19.4. Six days were cloudy, 8 partly cloudy, and 17 were clear.

The following table gives comparisons with preceding 42 Octobers:

Oct.	Number Of Rains.....	Rain in Inches.....	Per cent of Cloudiness...	Prevailing Wind.....	Mean Temperature.	Maximum Temperature	Minimum Temperature	Mean Barometer.	Maximum Barometer...	Minimum Barometer...
1858.....	6	5.67	42	.....	56.38	92	30	.....	.....	.....
1859.....	2	.64	42	S	53.87	84	28	.....	.....	.....
1860.....	1	.42	10	SW	56.31	91	29	.....	.....	.....
1861.....	6	2.12	42	NW	55.67	84	32	.....	.....	.....
1862.....	4	1.62	31	S	58.98	94	16	.....	.....	.....
1863.....	3	2.40	42	NW	47.80	79	11	.....	.....	.....
1864.....	4	.68	46	NW	48.92	73	25	.....	.....	.....
1865.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
1866.....	3	.43	22	S	57.53	88	30	.....	.....	.....
1867.....	5	.91	29	S	56.31	92	29	.....	.....	.....
1868.....	6	2.51	37	S	52.43	79	32	.....	.....	.....
1869.....	2	.43	24	SW	44.05	79	19	28.88	29.20	28.50
1870.....	9	5.06	51	SE	56.05	78	30	.....	.....	.....
1871.....	6	1.20	32	SW	55.81	91	31	.....	.....	.....
1872.....	5	2.76	22	S	54.98	91	27	.....	.....	.....
1873.....	2	.42	42	SW	51.23	84	14	28.76	29.10	28.32
1874.....	3	.22	39	SW	56.14	84	15	28.81	29.18	28.30
1875.....	3	1.04	38	SW	53.04	88	23	28.78	29.17	28.32
1876.....	3	1.61	41	SW	53.59	83	21	28.74	29.33	28.13
1877.....	8	9.07	66	SW	53.18	80	27	28.76	29.06	28.39
1878.....	4	1.06	29	SW	54.67	89	17	28.74	29.26	28.16
1879.....	4	2.63	37	S	60.84	86	24	28.70	29.17	28.40
1880.....	7	2.20	44	SW	52.10	81	23	28.69	28.98	28.21
1881.....	8	4.27	59	SW	56.54	88	32	28.65	28.96	28.07
1882.....	4	3.54	38	SW	57.71	83	32	28.62	28.92	28.10
1883.....	12	7.05	55	E	51.45	87	31	28.68	29.10	28.10
1884.....	6	2.22	20	S	60.06	87	33	28.57	28.88	28.34
1885.....	4	1.72	22	NW	50.62	85	20	28.61	28.87	28.37
1886.....	3	2.42	16	SW	60.93	91	25	29.03	29.45	28.49
1887.....	2	2.20	18	.....	51.00	91	16	29.09	29.54	28.52
1888.....	4	2.74	29	.....	52.10	82	23	28.90	29.16	28.55
1889.....	3	1.42	40	E	53.74	96	26	29.12	29.40	28.76
1890.....	4	1.99	29	N	55.58	86	23	28.87	29.29	28.50
1891.....	4	2.45	13	SW	55.21	89	22	29.03	29.44	28.66
1892.....	4	1.32	19	S	58.45	93	23	28.90	29.21	28.55
1893.....	2	.71	11	S	57.92	95	24	28.81	29.31	28.44
1894.....	4	1.89	22	S	59.68	93	24	28.76	29.14	28.30
1895.....	3	.53	25	S	53.69	87	21	28.94	29.25	28.45
1896.....	5	5.13	32	S & SE	55.29	92	28	28.84	29.21	28.26
1897.....	4	2.02	23	S	62.16	93	32	28.91	29.20	28.54
1898.....	5	1.93	46	N	53.13	96	24	28.90	29.37	28.49
1899.....	4	1.89	21	SW	63.94	95	32	28.90	29.28	28.50
1900.....	7	2.22	33	S	63.05	92	33	28.89	29.34	28.33
Sum.....	188	94.56	1337	.....	2304.03	.....	.....	835.91	.....	.....
Means.....	4.5	2.25	33	S	54.38	.....	.....	28.83	.....	.....

Rainfall.—The total rainfall was 2.22 inches, which is 0.03 inches below normal. There have been 14 Octobers with more rainfall and 26 with less. Rain fell in measurable quantities on 7 days.

Barometer.—The mean pressure for the month was 28.89 inches, which is 0.06 inch above the normal. The maximum was 29.34 inches at 7 A. M. on the 8th, the minimum 28.33 inches at 7 A. M. on the 21st—a monthly range of 1.01 inches.

Wind.—The wind was from these directions the following number of times: North 9, northeast 5, east 0, southeast 2, south 31, southwest 8, west 2, and northwest 5. The total run of wind was 6886 miles, which is 387 miles below normal. This gives a mean daily velocity of 222.13 miles and a mean hourly velocity of 9.26 miles. The maximum daily velocity was 458 miles on the 5th; the minimum, 43 miles on the 11th. The maximum hourly velocity was 32 miles from 12 to 1 P. M. on the 25th.

WIND RECORD.

OCTOBER.	Total Miles.....	Mean Daily.....	Maximum Daily.....	Minimum Daily.....	Mean Hourly.....	Maximum Hourly.....
1889.....	4854	156.59	349	82	6.53	26
1890.....	7008	226.06	460	48	9.42	34
1891.....	6919	223.19	560	75	9.30	30
1892.....	7039	227.06	729	68	9.46	41
1893.....	8741	281.96	500	108	11.75	32
1894.....	7903	254.90	562	92	10.62	34
1895.....	5998	193.48	395	86	8.06	28
1896.....	6535	210.81	465	61	8.78	32
1897.....	7837	252.81	609	80	10.53	35
1898.....	8944	288.52	694	36	12.02	35
1899.....	8608	277.68	638	58	11.57	39
1900.....	6886	222.13	458	43	9.26	32
Sums.....	87271	2815.15	.....	.....	117.30	.....
Means.....	7273	234.59	.....	.....	9.78	.....

ERNEST R. NICHOLS, *Observer.*

Kansas State Agricultural College.

FARMERS' SHORT COURSE.

JANUARY 3 TO MARCH 22, 1901.

This course is designed for farmers and farmers' boys who cannot spare time or money to take the regular four-years course.

It gives a short practical training in feeds, feeding, stock breeding, crop production, diseases of farm animals, orcharding and gardening.

No man, young or old, who expects to stay on the farm can afford to miss this opportunity to gain information that will help him to make farming more profitable.

To Students: Every student should induce at least one young man to attend this course. Write for full particulars to

Pres. E. R. NICHOLS, Manhattan, Kan.

Volume 27.

Number 7.

THE INDUSTRIALIST

ISSUED WEEKLY BY

KANSAS STATE
AGRICULTURAL COLLEGE

☆ ☆ ☆

<i>Editor-in-Chief,</i>	-	<i>Pres. E. R. Nichols</i>
<i>Local Editor,</i>	..	<i>Prof. J. D. Walters</i>
<i>Alumni and Former Students,</i>		<i>Prof. J. T. Willard</i>

☆ ☆ ☆

Published by
PRINTING DEPARTMENT
J. D. Rickman, Supt.

Historical Society

BOARD OF INSTRUCTION.

ERNEST R. NICHOLS, A. M. (University of Iowa), President, Corner Poyntz and Juliette ave	
JOHN D. WALTERS, M. S. (Kansas State Agricultural College)	North end of Sixth street
Professor of Industrial Art and Designing.	
ALEXANDER B. BROWN, (Boston Music School), A. M. (Olivet) ..	817 Houston street
Professor of Music.	
JULIUS T. WILLARD, M. S. (Kansas State Agricultural College)	1211 Moro street
Professor of Applied Chemistry.	
ALBERT S. HITCHCOCK, M. S. (Iowa Agricultural College) ..	College Hill, 2 miles N. W. of College
Professor of Botany.	
FREDRIC A. METCALF, O. M. Superioris Honoris (Emerson Coll. Oratory) 6th and Poyntz ave.	
Professor of Oratory.	
GEORGE F. WEIDA, Ph. D. (Johns Hopkins)	517 Fremont street
Professor of Pure Chemistry.	
HENRY M. COTTRELL, M. S. (Kansas State Agricultural College)	College Campus
Professor of Agriculture, Superintendent of Farm.	
MRS MINNIE AYA NELLIE STONER, (Boston N. S. of H. A.), B. S. (S. D. A. C.) Fourth and Osage	
Professor of Domestic Science, Dean of Women's Department.	
JOSEPH D. HARPER, M. S. (Rose Polytechnic Institute) Houston st., between 6th. and 7th. streets	
Professor of Mechanical Engineering, Superintendent of Shops.	
EDWIN A. POPENOE, A. M. (Washburn)	Seventh and Osage streets
Professor of Horticulture and Entomology, Superintendent of Orchards and Gardens.	
FRANK C. LOCKWOOD, Ph D (Northwestern)	Corner Fifth and Humboldt
Professor of English.	
BENJ. L. REMICK, Ph. M. (Cornell College)	Fourth and Osage
Professor of Mathematics.	
BENJ. F. EVER	512 Houston street
Professor of Physics and Electrical Engineering.	
C. E. GOODRILL, A. M. (Franklin)	
Professor of History and Economics.	
MISS HARRIET HOWELL, (Pratt Institute)	Corner Poyntz and Juliette avenues
Superintendent of Domestic Art.	
JOSHUA D. RICKMAN, I. T. U.	911 Osage street
Superintendent of Printing.	
MISS JOSEPHINE T. BERRY, A. B. (Kansas University)	Sixth street and Poyntz avenue
Librarian.	
B. S. MCFARLAND, A. M. (Miami),	Fourth and Osage
Principal Preparatory Department.	
MISS FLORENCE BALL	N. E. Cor. Juliette and Fremont streets
Director of Physical Training.	
MISS LORENA E. CLEMONS, B. S. (K. S. A. C.), Secretary	Corner Fourth and Laramie
SEPTIMUS SISSON, S. B. (Chicago), V. S. (Toronto)	Cor. Manhattan avenue and Moro
Associate Professor of Veterinary Science and Biology.	
D. H. OTIS, M. S. (Kansas State Agricultural College)	College Hill
Assistant Professor of Dairying.	
WILLIAM ARCH MCKEEVER, A. M. (Kansas University)	621 Houston street
Assistant Professor of English and Philosophy.	
MISS JOSEPHINE C. HARPER, Instructor in Mathematics	Corner Sixth and Pierre streets
MISS ALICE RUPP, (Indiana State Normal), Instructor in English	
CHARLES EASTMAN, Cadet Major and Acting Commandant	611 Poyntz avenue
WILLIAM L. HOUSE, Foreman of Carpenter Shop	Corner Sixth and Colorado
CHAS. W. PAPE, M. S. (K. S. A. C.), Ass't in Zoology and Ass't Curator Museum ..	918 Osage st
R. W. CLOTHIER, M. S. (K. S. A. C.), Assistant in Chemistry. Fremont, between Fifth and Sixth	
MARGARET J. MINIS, Assistant Librarian	Fourth and Moro streets
R. H. BROWN, M. T. (Kan. Con. of Music), B. S. (K. S. A. C.), Ass't in Music. 817 Houston street	
J. M. WESTGATE, M. S. (K. S. A. C.), Assistant in Botany, Cor. Manhattan avenue and Vattier	
MAY SECREST, B. S. (K. S. A. C.), Assistant in Domestic Art, Cor. Leavenworth and Seventh	
WM. ANDERSON, B. S. (K. S. A. C.), Assistant in Mathematics. Cor. Humboldt and Juliette ave	
GERTRUDE BARNES, Assistant Librarian	Cor. 9th and Moro
ALBERT DICKENS, B. S. (K. S. A. C.), Assistant in Horticulture, Fremont and Manhattan avenue	
WILLIAM BAXTER, Foreman of Greenhouses	
J. G. HANEY, B. S. (K. S. A. C.), Ass't in Feeding and Field Experiments, Manhattan ave and Kearney	
MARY PRITNER, B. S. (K. S. A. C.), Assistant in Domestic Science	Cor. 7th and Leavenworth
THEODORE LINDQUIST, M. S. (Northwestern), Ass't Physics ..	Cor. Fifth and Humboldt
W. M. SAWDON, B. S. (Purdue), Assistant in Mechanics	Juliette and Houston
O. I. PURDY, B. S. (K. S. A. C.), Assistant in Printing	1216 Fremont street
ADA RICE, B. S. (K. S. A. C.), Assistant in Preparatory Department	Osage and 8th. street
LOUIS WABNITZ, Foreman Iron Shops	5th and Osage
HENRY VAN LEEUWEN, (Univ. Wis. D. S.) Inst'r in Cheese Making ..	Manhattan and Kearney
E. W. CURTIS, (Univ. Wis. D. S.) Instructor in Butter Making	
FLORENCE L. GRANT (Mass. Normal Art School), Assistant in Drawing ..	Fourth and Osage
A. T. KINSLEY, B. S. (K. S. A. C.), Assistant Veterinary Department, Tenth and Kearney sts	
ELIZABETH AGNEW, B. S. (K. S. A. C.), Assistant in Domestic Science, Ninth and Moro streets	
JACOB LUND, M. S. (K. S. A. C.), Engineer	Cor. Tenth and Kearney
C. JEANETTE PERRY, B. S. (K. S. A. C.), Executive Clerk	Corner Colorado and Fifth
W. R. LEWIS, Janitor	N. E. corner Main College Building
ARCHIE HUYCKE, Secretary to President	Manhattan avenue and Kearney

THE INDUSTRIALIST.

VOL. 27.

MANHATTAN, KAN., NOVEMBER 13, 1900.

No. 7

SPECIAL EDUCATION.

IN LAYING plans for an education beyond that offered in the common schools, everyone should consider his own inclination as a large factor. The advice of others is all right in a way, and must be recognized when it comes from people who know from experience what is best for the average young man or woman. In following out his natural tendency one becomes a specialist. When one picks out a line that seems to offer a good future regardless of personal tastes he is apt to be a misfit.

In the older days a man with a college education could command a good position almost anywhere, but under the present conditions a diploma means very little in itself. The graduate of a first-class college or of the collegiate course of a university often finds that he is classed by business men as unskilled labor. He often has to accept a position as a clerk, street-car conductor, or some similar position requiring little technical training. The rapid increase of specially trained men and women is gradually reducing the opportunities even now open to well-educated people who are not specialists. Business colleges will soon supply the demands of commercial houses for trained clerks, normal schools will soon be the only source of supplying common-school teachers, and in every line the young person will find that he will have to be specially trained, even to begin at the bottom. The business man of to-day cannot spare time and space in his establishment to educate raw material; he wants complete men just as he wants complete machinery. The man of today must differ from the man of the past as much as the apparatus he uses differs from the apparatus used by his predecessor in the last generation. If you expect to get more than a laborer's salary you must come prepared to earn it.

One great advantage of learning all about something is that there is always a place for a good man who knows his business. The man who "knows something about everything and everything

about something" always has more opportunities than he can use. Give him the general education without the special training and it is like building an arch without putting in the keystone. In selecting any special line, the other branches of learning must not be neglected. An arch must have a keystone, but the keystone will be valueless without the rest of the arch, and a lawyer or a farmer without a general education would be very much like an arch with nothing to support the keystone. In going through college, plan your course so that the arch and the keystone will be in perfect harmony. The specialist should get as much as he can out of every study he can take, while the student who is trying to get a diploma usually gets as little as he can of everything.

When the course in college is completed each student should be ready to take his place in real life, not as a leader in some great enterprise but where he belongs—at the foot of the ladder. Experience in the world is necessary for everyone who wants to reach the top. In starting out from this college, there are many lines of work open to the graduate who knows something and knows it well.

The particular field that I wish to suggest is that offered by the United States Department of Agriculture. This department is always looking for a man well fitted to take up some special line of work. It needs men now. It is just now rapidly expanding in many lines of practical work in which the workers are few and the demand is strong. The better fitted a man is for doing some special line of work the more certain he is of getting a good position. The people at large usually consider a government position as a political snap, and to some extent this is true, but in the Department of Agriculture the more a man can keep out of politics the better off he will be in the long run. The man who minds his own business is the man who gets a permanent position.

The positions open to persons who still have a reputation to make, do not, as a rule, carry large salaries, but they do carry remarkably good opportunities for study and advancement. The agricultural college graduate has a chance to get a two-years post-graduate course under the best scientists in nearly every line of research work bearing a practical application to the agricultural interests of this country. Instead of having to pay tuition he is given a scholarship paying him \$40 per month. In return for this he is expected to do his best and make the most of his oppor-

tunities. As yet the persons who have availed themselves of this offer have not been numerous enough to fill the demand for the natural increase in the department's force of skilled workers and scientists, and none have left Washington without the protest of their superiors, while several found promotion waiting for them at the close of their first year's work, and after passing a regular civil service examination, are now in direct line of promotion for the highest places under the civil service. In forestry work, in the various branches of plant culture, in all kinds of animal industry, in chemistry, and in fact, in almost every division or office, there is a steady increase in the demand for young men and women who can do something better than the average. The man who wants to do some particular thing usually has a hearing.

This College is already well represented in the Department of Agriculture, where there are now about a dozen men from this place. Many of these men are in a position to give work to one or more younger men or to recommend men to those who are looking for helpers. They invariably prefer Kansas men, and all that they ask is that he must come fitted for doing something.

The opportunity for travel in the employment of the government is very great, and in this line our graduates are hampered until they can become well acquainted with one or more foreign languages. While it is true that one can get through the civil service examinations without much knowledge of foreign tongues, no real standing can be had until German, French or Latin is added to the young scientists education, and every Kansas man in the department will join with me in saying that the students here should insist on being allowed the opportunity to master one or more of these languages before they leave College. A 1900 graduate of the Minnesota Agricultural College is now in Europe as a special agent of the Agricultural Department. If he had had no training in French and German before graduation, it would have been a year or so before he could have gone. An opportunity was offered to a Kansas graduate to take a similar trip through France and north Africa, but lack of training in language stood in his way. So it goes; the man who knows something about languages always stands at the front when the opportunities are handed out.

If anyone wishes to direct his education toward a government position, it is perfectly safe to go ahead, for the men there are looking for the same kind of men that the rest of the world is

looking for. Anyone that is fitted to fill a practical position in the government service will be well fitted to take many other places outside. A man can be a grass expert for the government or can superintend a large hay farm; he can be a live-stock inspector or a cattle man; a pomologist or an apple grower, and so on through the list. It don't make much difference what branch of knowledge you select for the keystone of your education, just as long as you select one; the one that you want.

In regard to picking out the line of work one wants to follow, there is plenty of room for advice. When one sees dozens of young men tumbling heels over head to get into a law school or a medical college and then looks at the hordes of unemployed lawyers and doctors in our cities, both large and small, the conclusion comes without much reasoning that there is something wrong. I have been asked many times in the last year if I could not recommend some young man for this or that kind of work but the ones who might have specialized in a scientific line had drifted off into law or medicine without one chance in ten of ever getting their heads above water. Don't feel that you must construct the same kind of an arch that everyone else is building. The survival of the fittest is usually the survival of the unlike.

JESSE B. NORTON.

COW PEAS AS A SECOND CROP.

JULY 16, 1900, Messrs. F. A. and F. C. Abbott planted fifteen acres of cow peas on oat stubble. The Abbott farm is on the Kansas river bottom, a mile east of Manhattan, and its soil is very sandy.

A crop of oats was grown on the land and harvested. After the oats were stacked the ground was listed, the lister opening the furrows in the oat stubble just as it was left at harvest. The furrows were run about three feet apart, the cow peas were drilled in the bottom of the furrows with an ordinary one-horse corn drill, four bushels of seed being used to plant fifteen acres. The drill did not cover the seed well and the ground was harrowed to get more dirt in the furrows. The Whip-poor-will variety was used.

The beans were cultivated twice with an ordinary two-horse cultivator. This left the ground nearly level at the last cultiva-

tion. The season was very dry, but the beans made a heavy growth and at the time of cutting, October 4, stood two feet high and covered the space between the rows. The accompanying cut gives some idea of the luxuriant growth.

The Abbotts tried to cut the crop with a mower but found this unsatisfactory as the mower could not reach the vines that were on the ground, and with part of the vines cut and part uncut it was difficult to gather the tangled mass. Finally, after consulta-



tion with the College farm people, the Miller Bean Harvester was tried and found to do the work just right. This machine is made by the Le Roy Plow Company, Le Roy, New York, and was designed for harvesting navy beans, but we have found it just as successful in harvesting soy beans and cow peas.

With the Miller harvester, two rows were cut at a time, the knives cutting off the plants just below the surface of the ground and the wings above the knives throwing the vines from the two rows together into a windrow. The vines were put up in small cocks, where they were left to cure until dry enough to stack.

The yield of hay was estimated to be one ton per acre, possibly a little more. Cow-pea hay is nearly equal to alfalfa hay in feeding value and contains about fifty per cent more flesh- and milk-making material than clover hay. At the time the cow peas were

cut alfalfa hay was selling at \$6 per ton in the stack. This would make the value of the cow-pea hay \$5.50 per acre, a profitable second crop. The vines were covered with pods and the beans would have been ripe if left for two or three weeks longer, but this could not be done on account of the frost. It was estimated that if the beans had been allowed to ripen they would have yielded twenty bushels per acre. Early planted cow peas in this vicinity seldom yield over three or four bushels per acre.

This trial indicates that the cow pea may be of great value in this section of the State as a second crop, following wheat, oats, or millet. It is a vigorous grower during drought, and besides its value as feed the cow pea enriches the ground on which it grows and makes the land more mellow. The cow pea binds sandy soils together and it loosens heavy soils, making them easier to handle. The Abbotts report finding many tubercles on the roots of these cow peas.

H. M. COTTRELL.

HALF A DOZEN DON'TS IN HOME ARCHITECTURE.

DON'T build without carefully prepared drawings, specifications and estimates. Thinking and figuring are the deadly enemies of failure in every undertaking. No one has ever built himself a home without regretting that his foresight and forethought did not prevent many mistakes in arrangements or finish, and it is a common "saw" that the first house a man builds is always unsatisfactory. If this is true where careful planning has been done by the owner and his architect, how much more must it be true where there has been no planning. The writer could tell of some very amusing occurrences from the near vicinity where dwellings had been built by village carpenters and without drawings and specifications, but as no two cases are exactly alike he can only say: Don't do it.

Don't expect good work of a poor mechanic. Inquire carefully into the ability and integrity of the contractor or mechanic who bids to do the work. Business transactions, and especially such that involve the performance of skilled labor, should be made with business wisdom. "Ye can not gather grapes from thorns and figs from thistles." Good mechanics are a very scarce article—they are becoming scarcer every year. It is no easy matter to find really first-class stone-masons, carpenters, plumbers and painters.

yet such highly skilled and generally intelligent men are absolutely necessary to construct a modern residence—even if this is but small and unpretentious. Find them and treat them well!

Don't expect to get something for nothing. In building as well as in every other business undertaking, one must expect to pay well and promptly for values received. The statement which one hears so often, that a certain building or home improvement has cost more than the owner expected is simply an acknowledgment that no carefully prepared estimate had been made, or that somebody had expected to pay less for the job than it was worth—less than current prices. Be fair in all bargains. An attempt to underpay mechanics or dealers in building material is a boomerang—a gun with a reaction.

Don't build exclusively for show—build for comfort. This caution does not mean that the building should lack good outline and every touch of elegance; that it should have the aspect of a livery stable in a frontier village, but it means that the owner should think of the general arrangements of the main rooms, and especially the kitchen with its chimney, cistern, cesspool, pantry, and cellarway, before he should perfect the plans for the front porch, the main entrance, the hall with its colored windows and the parlor with its open archways and gorgeous fireplace, the things that are to astonish the natives and the strangers.

Don't build in a low place. Low sites are always unhealthy. Do not assume that you can dig a cellar and a cistern and in this way fill up the home lot. Do not believe the land agent when he mentions it as a favorable item in his prospective deal. To fill up a low lot requires generally more earth than one can dig up by making a few places still lower, and all difficulties are not overcome by this. The character of the subsoil can not be changed and the exhalation of the swamp gases from such sites can not well be stopped by spreading a few feet of loose earth over them. Select a high and dry place for a home, even if it is a little farther away. When the lot is wet, get plenty of tiling and drain it well. Do not use manure or dumpings for filling low places.

Don't build close to the public road. Plan to have a front yard with a little greensward, a curved walk and a few trees and bushes. Such touches of natural beauty will enhance the home more than any ordinary architecture could do. Do not try to outdo the neighbor who builds snug against the sidewalk so as to

look up and down the street. Architects say that the proper distance of a suburban home from the street is equal to from three to five times its full height. For a two-story house, this will make from ninety to one hundred fifty feet.

Don't build without an experienced architect.

J. D. WALTERS.

THE SILO FOR KANSAS.

IN the summer of 1899 the largest forage crop was raised in Kansas that the State has ever seen. In many counties there were five times the rough feed that the cattle in those counties could eat through the winter. Cattle were shipped in from other states, and yet thousands of tons of feed were wasted. In the summer of 1900 central Kansas suffered from a severe drought. Pastures began failing in July, the crops intended for winter feed were cut short and hundreds of car-loads of stock cattle, chiefly breeding stock, were shipped and sold out of the State.

If the feed of 1899 that was wasted and that was fed to cattle brought from other States had been saved for 1900 this stock could have been kept on the owners' farms.

There is a great loss in selling stock under these conditions. Besides the loss from the low price at which the stock is sold, such sales cut off all possibilities of continuous improvement from breeding up. This is the most serious loss of all.

The surplus feed of 1899 could have been saved through the silo, and then would have been ready whenever needed.

The advantages of the silo for Kansas stockmen are many. Feed in the silo is always ready for use. This year the pastures were dry July 1 and stayed dry till September 15, when heavy rains put them in good feeding condition. The stockman with a silo could have opened it as soon as the pasture began to get short and could have fed silage until the rains came. Then if he had any silage left he could have covered it up and the silage would have been ready for feeding next winter or next year, or at any other time needed. Good silage in good silos will keep for years. It has been kept for seven years and then found to have been in as good condition as when first made. The man with plenty of ensilage has full feed for his cattle every day in the year, no matter what the weather may be.

All the rough feed may be saved if put in the silo. If it rains and forage can not be cut and cured dry, put it in the silo. We have put corn and clover into the silo between showers when the feed was dripping wet. If crops burn up with the drought, cut them as soon as possible, sprinkle with water until the material is thoroughly dampened and the ensilage will keep well. No matter what the season—wet or dry—crops may be saved in the silo in their most palatable form and the loss is considerably less than by the usual methods of harvesting.

Our best varieties of forage crops for ensilage are also the best varieties for resisting drought and the heaviest yielding varieties. In this way the silo will enable the Kansas stockman to get the largest amount of feed per acre.

In the past years the chief objections to silage has been the high cost of the silos, but in recent years the construction of the round silo has been developed until the cost has been lowered to the reach of the average stockman.

It is not probable that ensilage will ever take the place of dry feeds for the bulk of Kansas feeding. As long as the Kansas farmer can raise alfalfa hay and deliver it in the feed lot at an average cost not to exceed \$3 per ton, alfalfa and other dry feeds will be cheaper than ensilage. But ensilage will be the feed to use when pastures and crops are cut short by drought. This silage will be made from the surplus of unusually bountiful years on the farm where it is used, and the full number of stock that the farm can carry in a good year will be kept in all years.

We believe that the time is coming when every well-equipped stock farm in Kansas will carry enough ensilage to feed its live stock at least six months. When this time comes our stockmen will be independent of drought.

H. M. COTTRELL.

The following poetical effusion, presumably from the pen of a member of the College battalion, was found on the floor of Professor Walters drafting room:

At early morn, when all the grass is wet with sparkling dew;
When all the flowers are fresh and fair, and all the skies are blue;
When every little fickle wind is whispering in the trees;
When every single little leaf is quivering in the breeze;
When all the world is waking up to greet the coming day,
We're drilling on the College lawn; 'tis healthy, so they say.

THE INDUSTRIALIST.

BOARD OF REGENTS.

*Published weekly during the College year by the
Printing Department of the*

KANSAS STATE AGRICULTURAL COLLEGE. Manhattan, Kansas.

☆ ☆ ☆

PRES. E. R. NICHOLS.....Editor-in-Chief
PROF. J. D. WALTERS.....Local Editor
PROF. J. T. WILLARD.....Alumni Editor

HON. E. T. FAIRCHILD, President....Ellsworth
HON. J. S. McDOWELL, Vice-President,
Smith Center
HON. W. T. YOE, Treasurer.....Independence
HON. WM. HUNTER, Loan Comm'r, Blue Rapids
HON. MRS. SUSAN J. ST. JOHN.....Olathe
HON. CARL VROOMAN.....Parsons
HON. J. M. SATTERTHWAITE.....Douglas

PRES. E. R. NICHOLS, Sec. *ex-officio*.

LOCAL NOTES.

Remember the course lecture by J. P. Dolliver, next Friday evening.

The chrysanthemums in the College greenhouse are beginning to bloom.

Prof. B. S. McFarland attended the wedding of his daughter, at Olathe, on November 5.

Prof. E. A. Popenoe went to Junction City, on November 2, to inspect some nursery stock.

Mrs. Alice (Carnahan) Sherwood, student in '98-'99, died at her home in Topeka, November 10.

Lieut. Phil. Fox, professor of military science and tactics at the St. John Military Academy, at Salina, visited College last Tuesday.

News comes from San Jose, Cal., of the serious illness of Mrs. Florine (Secrest) Linderman. Mrs. Linderman graduated with the class of '99.

Assistant Professor Otis has been invited to deliver an address before the Missouri State Dairy Association, at Kansas City, December 20 to 22.

Mrs. G. Lemkau, of Glenville, Neb., while on her way to visit her folks at Topeka, stopped off between trains to visit her brother, C. W. Pape.

The Farm Department has finished inoculating one hundred ten head of calves for the second time to prevent blackleg. The virus used was prepared by the Veterinary Department.

A large number of students took advantage of the one-fare rate offered by the railroads and went home to vote. Some were furnished passes by their respective central committees.

The football game between the State Normals and the State Agriculturalists, which came off last Saturday in the Manhattan athletic park, resulted in a victory for the former. Score, 11:0.

Beside the regular work of printing and issuing the weekly INDUSTRIALIST and the *Students' Herald* the Printing Department has lately printed and mailed 17,000 copies of the farmer's short course and dairy school circular.

F. J. Lundstedt, of Lindsborg, John German, of Hiatville, H. W. Nafziger, of Narka, and W. T. Baird, of Arkansas City, write that they expect to come this winter for the second term of the Farmers' Short Course. G. O. Learned and M. E. Replogle write that they cannot come back this winter but will be here later.

Student A. R. Engle has dropped out of College and he and his wife have returned to Minneapolis, where Mr. Engle will resume his old position with the Minneapolis *Messenger*. While thus engaged he will carry on a correspondence course in architecture.

Professor and Mrs. Metcalf, assisted by Mr. R. H. Brown, violinist, Mrs. R. H. Brown, harpist, and Mr. F. F. Fockele, vocalist and mandolin, will give one of the Popular "Metcalf Recitals" at Fort Riley, Kan., on Thursday evening, November 15.

During Thanksgiving week College will commence on Monday morning and end on Wednesday evening, with a vacation until the following Tuesday. This arrangement was made to accommodate the large number of students who wish to go home for a Thanksgiving visit.

Owing to an unusual number of classes caused by the great increase in attendance, the Faculty of the State Agricultural College will not be able to assist farmers' institutes after December 31. Places wanting institute help from the College should arrange to have their institutes before this date. Kansas papers please copy.

Pres. E. R. Nichols left last Friday for New Haven, Conn., to attend the annual meeting of the Agricultural Colleges and Experiment Stations of America. He will be absent about ten days. Professor Walters, as the senior member of the Faculty, will attend to routine executive duties during the President's absence.

The Chemical Department of the College lost its polariscope for sugar analysis in the fire last spring, that being the most valuable single instrument lost. To replace it the Experiment Station has just received a Schmidt and Haensch half-shade saccharimeter with triple field of vision. It will be used in analysis of beets, sorghum, and sugars.

The College pay-roll for October shows that the students received \$969.45 for 9694.5 hours of work performed during that month. This is equal to 969½ days at ten hours each, or, deducting Sundays and holidays, considerably over three years of work for one man. The regular employees of the College and Station received \$335.29, and the instructors and professors \$4393.84.

Professor Cottrell and Assistant Clothier attend farmers' institutes as follows: Hazelton, November 12; Attica, November 13; Anthony, November 14; Harper, November 15; Argonia, November 16; and Wellington, November 17. Professor Eyer will show stereopticon views of the College at the institutes at Argonia and Wellington and Miss Stoner will lecture on Domestic Science before the Wellington institute.

If you have failed in examination, before you begin to criticize the instructor just take a look back over the half-term's work and see whether or not you have done your share. The chances are that you have not or you would not have failed. As a rule, the professor dislikes a failure as bad as the student does, and is not apt to fail a deserving student. Well-prepared daily lessons are the only safeguard against the terrors of examination day.—*Students' Herald*.

The Kansas State Grange meets at Manhattan, December 11 to 13. A public meeting will be held in the College chapel Tuesday evening, December 11, at which Prof. B. S. McFarland will give an address on the object of the Grange and W. R. Goit, of Kansas City, will deliver an illustrated address on "Making Good Roads." This address attracted marked attention in Topeka at the recent Good Roads State Convention. The meeting will be free and all friends of the Grange and of the College are invited.

The monthly Manhattan stock sale Saturday was as successful as its predecessors. A good big crowd was in attendance, bidding was free and spirited and sales reached the \$4000 mark. Colonel Langworthy, of Clay Center, and Captain Sterritt, of this city, were the auctioneers. Visiting stockmen from over the State were to be seen in the arena who expressed themselves as particularly well pleased with our facilities, the market afforded and the animals put up for sale. The next regular sale will be held the first Saturday in December.

The railroads of the State will give a one-and-one-third rate to Manhattan during the meeting of the State Grange, December 11 to 13. The tickets will be sold on the certificate plan. The passenger pays full fare going, taking a receipt from his local agent. This receipt is presented at Manhattan to the secretary of the State Grange, and after being signed by him entitles the holder to a one-third rate returning. Every student can take advantage of this rate and get his parents and friends to visit the College. We would like to welcome a thousand friends of the students at this meeting.

The girls of the College Young Women's Christian Association are editing a cook-book which will be on the market before the holidays. It will be a neat little volume bound in red and bearing a title in gilt letters, "A Kansas Kook-Book for Kansas Kooks." Each recipe used has been approved by Prof. Minnie Stoner, of the Domestic Science Department. The book will be especially adapted to Kansas as it will contain recipes for foods which can be obtained in our markets. Chapters will be devoted to cereals and breakfast dishes, eggs, meat, fish and oysters, salads, soups, bread, cake, desserts, creams, ices, and beverages. One chapter will be devoted to favorite recipes of our graduates and former students who are now instructors and professors of domestic science in other schools. The books will sell for fifty cents each and can be had from the association girls as soon as published.

THE INDUSTRIALIST.

FATTENING STEERS WITHOUT HOGS.

(Press Bulletin No. 72, by Farm Department.)

February 13, 1900, the Kansas State Agricultural College began fattening eighty head of steers to test the value of several different methods of preparing feed for steers where, on account of cholera, hogs could not be used to follow and save the droppings. The steers were divided into four lots of twenty each. Lot one was fed shelled corn and whole alfalfa hay, lot two shelled corn and alfalfa hay cut in inch lengths, lot three corn-meal and whole alfalfa hay, and lot four corn-meal and alfalfa hay cut in inch lengths. With all lots the hay was thrown in the bottom of the grain boxes, the grain placed upon the hay and the two carefully mixed. Salt and water were kept before the steers all the time.

The average weight of the eighty head at the beginning of the experiment was 1036 pounds per steer. The steers were fed 116 days and were then ready for market, averaging 1307 pounds each, an average gain of 271 pounds each or an average daily gain of 2.34 pounds per steer.

The steers required an average of 747 pounds of grain and 385 pounds of hay for each 100 pounds of gain. This is much below the average amount of feed required to make 100 pounds of gain.

The steers ate an average each of 19.4 pounds of grain a day. This is a low amount of feed for the gain made.

The gains for the whole feeding period are as follows:

	<i>Gain per steer.</i>
Shelled corn, whole hay	262 lbs.
Shelled corn, cut hay	257 lbs.
Corn-meal, whole hay	273 lbs.
Corn-meal, cut hay	293 lbs.

Average gain of steers fed shelled corn, 260 pounds each. Average gain of steers fed corn-meal, 283 pounds each. This shows a gain of 8.8 per cent from grinding. The steers fed shelled corn required an average of 780 pounds of grain to make 100 pounds of gain while those fed corn-meal required an average of 718 pounds of grain for 100 pounds of gain.

But little was saved in cutting the hay, the average gain of the steers fed whole hay being 286 pounds each and those fed hay cut 275 pounds each, a gain of 2.6 per cent from cutting.

There is a shortage of both grain and roughage in Kansas this year and every feeder should get the most possible out of his feed. One experiment does not settle any question in feeding but may indicate what is probable. The results obtained in this experiment seem to indicate that feeders can get considerably more gains from their feed by mixing the grain and hay, as considerably less than the usual amount of grain was required in this feeding to make 100 pounds of gain. Our explanation is that where grain is fed alone much of it is not brought back to the mouth again while if the grain is mixed with hay all of it gets the benefit of thorough mastication in the cud. There is less difficulty from scouring where grain and hay are fed together.

The steers were sent to Armour Packing Company, Kansas City, for slaughter test and their report is as follows: "The cattle dressed out 59.3 per cent of live weight, the yield of fat 6.7 per cent. The carcasses cut bright, were of good color on the outside and made good, clean, bright-looking, well-covered beef. Our buyers consider that ground corn and alfalfa is the best feed for cattle."

The eighty head made an average gain of 7.5 pounds for each bushel of food eaten and ate 28.8 pounds of hay with each bushel of grain.

The gain from the different methods of feeding was as follows:

	<i>Gain per bushel of grain (56 pounds).</i>
Shelled corn, whole hay	7.1 lbs.
Shelled corn, cut hay	7.3 lbs.
Corn-meal, whole hay	7.4 lbs.
Corn-meal, cut hay	8.2 lbs.

KANSAS STATE AGRICULTURAL COLLEGE

....DAIRY SCHOOL....

January 3, to March 22, 1901.


A thorough training in selection, feeding and breeding of dairy cattle, private and creamery butter making, farm and factory cheese making and milk testing.

**New Buildings,
New Apparatus,
Everything up-to-date.**

Every earnest young man taking this course last year had a position before the close of the term and we have had constant calls since. Two hundred places will be open next spring at good wages to men who do thorough work in this course.

STUDENTS. Each of you who knows a young man not able to take the regular College course, but who would like to increase his wages, should get him to attend our Dairy School. For full particulars address

Pres. E. R. NICHOLS, Manhattan, Kansas.



**WEBSTER'S
INTERNATIONAL
DICTIONARY**

WEBSTER'S INTERNATIONAL DICTIONARY

**GET
THE
BEST**

NEW EDITION

NEW PLATES THROUGHOUT

Now Added **25,000 NEW WORDS**, Phrases, Etc.

Rich Bindings • 2364 Pages • 5000 Illustrations

Prepared under the supervision of W. T. Harris, Ph.D., LL.D., United States Commissioner of Education, assisted by a large corps of competent specialists.

BETTER THAN EVER FOR GENERAL USE

Also Webster's Collegiate Dictionary with Scottish Glossary, etc.

"First class in quality, second class in size."

Specimen pages, etc., of both books sent on application.


G. & C. MERRIAM CO., Publishers, Springfield, Mass., U. S. A.

JUST ISSUED

GET THE BEST

A

Ω



Volume 27.

Number 8.

THE INDUSTRIALIST

ISSUED WEEKLY BY

KANSAS STATE
AGRICULTURAL COLLEGE

☆ ☆ ☆

Editor-in-Chief,

Pres. E. R. Nichols

Local Editor,

Prof. J. D. Walters

Alumni and Former Students,

Prof. J. T. Willard

☆ ☆ ☆

Published by
PRINTING DEPARTMENT
J. D. Rickman, Supt.

BOARD OF INSTRUCTION.

- ERNEST R NICHOLS, A. M.** (University of Iowa), President, Corner Poyntz and Juliette aves
JOHN D. WALTERS, M. S. (Kansas State Agricultural College) North end of Sixth street
 Professor of Industrial Art and Designing.
ALEXANDER B. BROWN, (Boston Music School), A. M. (Olivet) 817 Houston street
 Professor of Music.
JULIUS T. WILLARD, M. S. (Kansas State Agricultural College) 1211 Moro street
 Professor of Applied Chemistry.
ALBERT S. HITCHCOCK, M. S. (Iowa Agricultural College) .. College Hill, 2 miles N. W. of College
 Professor of Botany.
FREDRIC A. METCALF, O. M. Superioris Honoris (Emerson Coll. Oratory) 6th and Poyntz ave.
 Professor of Oratory.
GEORGE F. WRIDA, Ph. D. (Johns Hopkins) 517 Fremont street
 Professor of Pure Chemistry.
HENRY M. COTTRELL, M. S. (Kansas State Agricultural College) College Campus
 Professor of Agriculture, Superintendent of Farm.
MISS MINNIE A VA NELLIE STONER, (Boston N. S. of H. A.), B. S. (S. D. A. C.) Fourth and Osage
 Professor of Domestic Science, Dean of Women's Department.
JOSEPH D. HARPER, M. S. (Rose Polytechnic Institute) Houston st., between 6th. and 7th. streets
 Professor of Mechanical Engineering, Superintendent of Shops.
EDWIN A. POPENOE, A. M. (Washburn) Seventh and Osage streets
 Professor of Horticulture and Entomology, Superintendent of Orchards and Gardens.
FRANK C. LOCKWOOD, Ph D (Northwestern) Corner Fifth and Humboldt
 Professor of English.
BENJ. L. REMICK, Ph. M. (Cornell College) Fourth and Osage
 Professor of Mathematics.
BENJ. F. EYER 512 Houston street
 Professor of Physics and Electrical Engineering.
C. E. GOODELL, A. M. (Franklin)
 Professor of History and Economics.
MISS HARRIET HOWELL, (Pratt Institute) Corner Poyntz and Juliette avenues
 Superintendent of Domestic Art.
JOSHUA D. RICKMAN, I. T. U. 911 Osage street
 Superintendent of Printing.
MISS JOSEPHINE T. BERRY, A. B. (Kansas University) Sixth street and Poyntz avenue
 Librarian.
B. S. MCFARLAND, A. M. (Miami), Fourth and Osage
 Principal Preparatory Department.
MISS FLORENCE BALL N. E. Cor. Juliette and Fremont streets
 Director of Physical Training.
MISS LORENA E. CLEMONS, B. S. (K. S. A. C.), Secretary Corner Fourth and Laramie
SEPTIMUS SISSON, S. B. (Chicago), V. S. (Toronto) Cor. Manhattan avenue and Moro
 Associate Professor of Veterinary Science and Biology.
D. H. OTIS, M. S. (Kansas State Agricultural College) College Hill
 Assistant Professor of Dairying.
WILLIAM ARCH MCKEEVER, A. M. (Kansas University) 621 Houston street
 Assistant Professor of English and Philosophy.
MISS JOSEPHINE C. HARPER, Instructor in Mathematics Corner Sixth and Pierre streets
MISS ALICE RUPP, (Indiana State Normal), Instructor in English
CHARLES EASTMAN, Cadet Major and Acting Commandant 611 Poyntz avenue
William L. House, Foreman of Carpenter Shop Corner Sixth and Colorado
Chas. W. Pape, M. S. (K. S. A. C.), Ass't in Zoölogy and Ass't Curator Museum . 918 Osage st
R. W. Clothier, M. S. (K. S. A. C.), Assistant in Chemistry, Fremont, between Fifth and Sixth
Margaret J. Minis, Assistant Librarian Fourth and Moro streets
R. H. Brown, M. T. (Kan. Con. of Music), B. S. (K. S. A. C.), Ass't in Music. 817 Houston street
J. M. Westgate, M. S. (K. S. A. C.), Assistant in Botany. Cor. Manhattan avenue and Vattier
May Secrest, B. S. (K. S. A. C.), Assistant in Domestic Art, Cor. Leavenworth and Seventh
Wm. Anderson, B. S. (K. S. A. C.), Assistant in Mathematics. Cor. Humboldt and Juliette ave
Gertrude Barnes, Assistant Librarian
Albert Dickens, B. S. (K. S. A. C.), Assistant in Horticulture, Fremont and Manhattan avenue
William Baxter, Foreman of Greenhouses
J. G. Haney, B. S. (K. S. A. C.), Ass't in Feeding and Field Experiments, Manhattan ave and Kearney
Mary Pritner, B. S. (K. S. A. C.), Assistant in Domestic Science Cor. 7th and Leavenworth
Theodore Lindquist, M. S. (Northwestern), Ass't Physics Cor. Fifth and Humboldt
W. M. Sawdon, B. S. (Purdue), Assistant in Mechanics Juliette and Houston
O. I. Purdy, B. S. (K. S. A. C.), Assistant in Printing 1216 Fremont street
Ada Rice, B. S. (K. S. A. C.), Assistant in Preparatory Department Osage and 8th. street
Louis Wabnitz, Foreman Iron Shops
Henry Van Leeuwen, (Univ. Wis. D. S.) Inst'r in Cheese Making 5th and Osage
E. W. Curtis, (Univ. Wis. D. S.) Instructor in Butter Making Manhattan and Kearney
Florence L. Grant (Mass. Normal Art School), Assistant in Drawing Fourth and Osage
A. T. Kinsley, B. S. (K. S. A. C.), Assistant Veterinary Department, Tenth and Kearney sts
Elizabeth Agnew, B. S. (K. S. A. C.), Assistant in Domestic Science, Ninth and Moro streets
Jacob Lund, M. S. (K. S. A. C.), Engineer Cor. Tenth and Kearney
C. Jeanette Perry, B. S. (K. S. A. C.), Executive Clerk Corner Colorado and Fifth
W. R. Lewis, Janitor
Archie Huycke, Secretary to President N. E. corner Main College Building
 Manhattan avenue and Kearney

THE INDUSTRIALIST.

VOL. 27.

MANHATTAN, KAN., NOVEMBER 20, 1900.

No. 8

SOME PECULIARITIES IN THE DEVELOPMENT OF MATHEMATICS.

IT IS not an uncommon thought in the minds of many that the body of known facts in mathematics lies within fixed limits and that beyond the boundaries of this realm nothing remains to be considered. It is readily seen, however, that a very strong presumption exists against this view, the moment our subject is thought of as related to the ordinary laws of growth and development. It is admitted that most of the branches taught in institutions of learning have a history, a life. For example, it is well known that the various subjects included by the term natural science have experienced a remarkable development in recent years. The body of accepted truths in this large realm of knowledge belongs to a living and growing organism. The case stands similarly with mathematics. Its history is long and honorable; its growth rapid in modern times, and it appears to-day not an assemblage of dead facts and isolated principles but an advancing and vital force seeking new worlds to conquer, having within itself the elements of life and able to serve practical purposes by means of its manifold applications. The beginnings of its truths date back to the earliest civilizations, and each succeeding generation has made contributions toward the present state of development.

It is not the purpose of this article to outline the history of mathematics, either in general or in any particular department, but rather to call attention to certain peculiarities connected with its growth.

1. *The Association of Mathematics and Philosophy.* The Greek philosophers were often mathematicians, or at least made their systems of philosophy rest upon a mathematical basis. Thales, one of the seven wise men of Greece, was the founder of the earliest Greek school of mathematics and philosophy. Pythagoras, the discoverer of the famous theorem in geometry known by his name, belongs to this class. Plato held the idea that the secret

of the universe was to be found in number and in form and made the study of geometry an indispensable preliminary to that of philosophy. When questioned as to the probable employment of the Deity, he replied that he "must be geometrizing continually." This close relationship of the two subjects has been maintained, though in a lesser degree, in later times. Des Cartes, the founder of analytic geometry, and Leibnitz, one of the inventors of the calculus, were scarcely less famed for their philosophical writings.

2. *The High Development of Geometry by the Greeks.* The Greeks knew but little of arithmetic and algebra, and their writings upon these subjects appeared almost always under the guise of geometry. It is one of the most remarkable facts in the history of mathematical instruction that the *Elements* of Euclid has been for over two thousand years the recognized text-book in elementary geometry. This treatise gives a systematic exposition of the results of all the earlier investigations enriched by the author's own contributions. From the standpoint of perfection of form, of elegant and rigorous demonstration, and of its exhaustive character, the work is a classic. But the Greeks did not render important service simply in the field of elementary geometry; they are also the creators of the theory of conic sections and the discoverers of many curves of higher order. Perhaps the most striking indication, however, of the extent of the Greek influence upon mathematical thought is found in the appearance of the three famous problems of antiquity, the trisection of the angle, the duplication of the cube, and the squaring of the circle. The Greeks failed to solve these problems by elementary methods. Their solution has occupied the attention of all the great mathematicians since, and it was only a few years ago that the verdict, impossible of construction by use of straight-edge and compass, was finally rendered. For this tremendous activity which has been so productive in the entire range of mathematics, the Greeks are responsible.

3. *Proof of Impossibility.* The idea of proving the possibility or impossibility of the solution of a given problem seems to have first attracted attention in comparatively recent times. After several thousand years of fruitless attempts to solve the problem of the quadrature of the circle, mathematicians began to suspect the impossibility of solution and to direct their efforts toward a

rigorous proof thereof. Finally, in 1882, Professor Lindemann, of Germany, succeeded in demonstrating such impossibility. It is hardly necessary to state that proofs of this character are of necessity subtle and complex.

4. *Mathematical Challenges.* During the sixteenth and seventeenth centuries a favorable method among mathematicians was to issue a challenge to some contemporary worker to solve a certain problem or set of problems. As an outgrowth of these challenges mathematical duels, bloodless yet often acrimonious, were common. While this plan may have stimulated the discovery of truth in some instances, yet it proved of little real benefit. One feature in this connection deserves mention, namely, the tendency on the part of investigators of this period not to publish but to conceal their discoveries. Cardan's *Ars Magna*, one of the chief mathematical works of the times, contained Tartaglia's solution of the cubic equation in violation of a solemn pledge of secrecy. The publication created no end of bitter feeling. It is gratifying to note the exactly opposite spirit of the present day.

These are a few of the points in the history of mathematics indicative of a somewhat unexpected course of development. Among other features may be mentioned the supposed mystic properties of numbers that led to the construction of magic squares and polygons, the mediæval connection with astrology, and the recent discussions on space of more than three dimensions. In the main, however, the progress of the science has been along natural lines. Much has been done, yet much more remains to be accomplished. The coming century will doubtless witness an ample extension of the already magnificent domain of modern mathematics.

B. L. REMICK.

ALGEBRA.

A Historic Sketch of its Development. The word algebra has its origin from the Arabian Aldschebr, and is the final outcome of the translation of the two words "Aldschebr Walmukabala," meaning restoration and opposition, respectively. They were first used by Alchwarizmi, who wrote a treatise on algebra and gave it the above title. When the book was first translated into the Latin it retained the whole title, but ere many years had

passed the last word was dropped, leaving Aldschebr, and it was changed to algebra after a few publications.

The earliest writing that has any of the elements of algebra in it is the papyrus, in the Rhind collection of the British museum. For a description see No. 21, Vol. 26. This manuscript contains eleven problems leading to equations of one unknown quantity. The next set is in the Palatine Anthology, which contains fifty problems leading to equations of one unknown quantity. A few of these problems are still found in some of the modern text-books on arithmetic.

Greeks. Greece, the home of culture, refinement and art, the country where geometry was developed to such a standard of excellency, did very little for the advancement of algebra. The only writer of note who devoted his time and energies to this subject was Diophantus. We know very little of his history. He died in the year 300 A. D., and was about eighty-four years old. His treatise was called the oldest work on the subject of algebra until the papyrus was found. He uses symbols to some extent and denotes addition by placing quantities side by side. He solved the quadratic equation, but discarded negative and irrational roots. To reduce an equation to the form $ax=b$ he adds or subtracts equals from the equals instead of transposing the terms and then collecting those that are alike. When reduced to the above form, to obtain the value sought he again resorts to subtraction. He lacked the power of generalizing his solutions. For instance, in solving the quadratics $ax^2+bx=c$, $bx+c=ax^2$ and $ax^2+c=bx$; he gave three solutions, one for each case.

Hindoo. The country of Hindostan seemed to possess a favorable soil for the development of symbols. They gave us the arithmetical numerals, and they were the first to use the symbolic algebra. Hankel says of them: "If we are to understand by algebra the application of arithmetical operation to complex magnitudes of all sorts, whether rational or irrational, number or space magnitude, the learned Brahmins of Hindostan are the real inventors of algebra." Two leading algebraists were found among these people. Brahmagupta (598-628 A. D.), wrote "the revised system of Brahma." He represents the unknown quantity as well as zero by a dot (.) and calls it sunya, meaning empty. At Bakhshâli an anonymous arithmetic was found in 1891 where the unknown was assumed to be one. Bahaskara, who wrote five

hundred years later than Brahmagupta, used three to represent the unknown. He showed very little advancement over his predecessor. These men brought all quadratic equations under one

general head and gave $x = \frac{\sqrt{ac + \left(\frac{b}{2}\right)^2}}{a} - \frac{b}{2}$ as the solution. They

were the first to recognize the absolute value of the negative quantities and admit of irrational results, but claimed these should be avoided. Their mathematics was written in verse and was more or less clothed with superstition.

Arabia. The Arabs drew more or less of their mathematics from two sources—from the Greeks and from the Hindoos. The Greek predominated. Abûl Wafâ (940–990 A.D.) translated Diophantus's algebra. Alchwarigmi, whose full name is given as Mohammed ben Musa Al Hovarezmi, was more or less influenced by both Greek and Hindoo. A Latin translation of his book has the following extract: "Spoken has Algoritmi. Let us give deserved praise unto God, our leader and defender." Here Algoritmi has taken the place of Al Hovarezmi, and from this we get our Algorithm. Al Karhi, of Bagdad, lived at about the beginning of the eleventh century. His treatise on algebra was the greatest algebraic work of the Arabs. After him things took a turn and began a general decline. The Arabs did not add anything new to the subject, but generalized what had already been given.

The crusades which followed checked the advancement of mathematics for two centuries. The revival began in 1202, when Leonardo of Pisa published his "Liber Abaci." Leonardo or Fibonacci had traveled in Egypt, Greece, and Arabia. He collected all the works on mathematics he could find, and finally published them in his book bearing the above title. Besides publishing the works of others he solved the equation $x^3 + 2x^2 + 10x = 20$. After him mathematics and especially algebra became a favorite study in Southern Europe.

Modern Times. The interest of mathematicians had for some time been concentrated upon the cubic equation. No one had up to this time been able to give a general solution for it. Scipio Ferro, of Bologna, succeeded in solving $x^3 + mx = n$ and taught it to his pupil, Floridus, in 1505. It was the custom at this time to keep the solutions a secret and only teach it to their pupils. Besides these there was a young man Nicolo who, while a small boy,

was cut by a French soldier about the face, from which he never completely recovered. The wound caused him to stammer, hence he was called Tartaglia, meaning stammerer. He had made wonderful progress in his work on algebra. In 1530 Calla proposed to him a set of problems leading to equation $x^3 + px = q$. Tartaglia found an imperfect solution and announced his success but withheld his solution. This caused Floridus to claim the ability of solving $x^3 + mx = n$. Tartaglia did not believe it and challenged him to a contest to prove his abilities. It was arranged to be held February 22, 1535, and to continue fifty days. Each was to propose thirty problems and the one solving the greatest number in the given time to be the winner. Tartaglia labored hard before the contest began and succeeded in solving $x^3 = mx + n$ ten days previous to the appointed time. When the battle for supremacy began Tartaglia solved all of Floridus's problems in two hours while Floridus was not able to solve one of Tartaglia's. In 1541, Tartaglia solved the general cubic equation, but did not receive the credit for it. Cardano succeeded after many attempts to get his solution, under promise of forever keeping it a secret, but contrary to his oath he published it as the crowning event of his mathematical work, "Ars Magna," without giving due credit. It is therefore known as Cardan's solution. Lodovico Ferrari, Cardan's pupil a few years later, solved the biquadratic.

The later stages in the development have been devoted to more general solutions: improvements in notation, finding of relation between roots and coefficients, the treatment of equations of higher degree than the fourth, and the general theory of equations. A great many attempts were made to solve the equation of the fifth degree until Paolo Ruffini (1765-1822) gave an imperfect solution showing the impossibility of expressing by means of radicals the value of the roots of an equation higher than the fourth degree. Niels Henrik Abel (1802-1829), a young Norwegian, a few years later gave a rigorous proof.

A long list of noted mathematicians follow, but we will only be justified in mentioning a few this time. John Widmann, in his arithmetic published in 1489, first introduced the + and - signs. Christoff Rudolff, in 1525, introduced them in his algebra, the first in the German language. Michael Stifel (1486?-1567), the greatest German algebraist of sixteenth century, introduced the $\sqrt{}$ sign to indicate roots. Franciscus Vieta (1540-1603), the noted

French writer of the same time, reduced the affected quadratis to the form of the pure quadratic, and hinted at the relation of roots and coefficients. Albert Girad (1590-1633), a Flemish writer, established the relation. We are indebted to Simon Stevin, of Belgium, for giving us the notation of exponents; to Descartes for the rule of signs; to John Wallis, of England, for negative exponents; and to Sir Issac Newton for the binominal theorem.

WM. ANDERSON.

THE NEEDS OF THE KANSAS STATE AGRICULTURAL COLLEGE.

THE time is rapidly approaching when the legislature will assemble and investigate the needs of the different State institutions for the biennial period of 1901-1903. The Agricultural College has increased its attendance and its courses of study to such an extraordinary extent during the past few years that liberal assistance by the legislature will be an absolute necessity. We need—we must have more classrooms and laboratories, more apparatus, more illustrative material and more teachers. The following paragraphs pertaining to our growth and general needs have been excerpted from a recent number of the *Kansas Farmer*, whose editor is intimately acquainted with our past, our work and our aims, and we feel that his judgment in this matter should carry some weight with our friends and patrons. Whatever may be the imperative wants of other departments of our prosperous State, the Agricultural College deserves to be treated liberally. It is one of the very foremost agricultural schools of the country and has the largest attendance of any agricultural school in the world. Kansas is an agricultural state and every cent invested in agricultural education will return to it an hundred fold.

"If this were a purely literary college instead of a college of sciences and agriculture, suitable buildings and equipment for the number of students here enrolled could have been provided for less money than has been invested in the buildings and equipment of this college. Much room and expensive equipment are necessary to teach sciences and their applications in agriculture and the mechanic arts. The Experiment Station, which is devoted to original investigation of agricultural problems, also requires much room and equipment.

"The attendance at the College is increasing steadily. There is

only one way to stop the enterprising boys and girls from the farms of Kansas from crowding into and availing themselves of the advantages of the Agricultural College, and that is by keeping them from knowing anything about these advantages. Every available room is now full and overflowing. But the number now in attendance only intimates the numbers who will attend in the near future. What is the College going to do to receive these seekers after practical knowledge? What is to be done when instead of eleven hundred the attendance shall be several thousand? After looking the situation over carefully the College authorities have formulated the following:

NEEDS OF THE COLLEGE FOR THE NEXT TWO YEARS.

<i>Classes.</i>	1901-02	1902-03
Physics and chemistry building and equipment.....	\$80,000	.....
Horticulture and entomology building, greenhouse and equipment.....	35,000	.....
Enlargement of chapel.....	15,000	.....
Addition to library, including heating and lighting....	10,000	.....
Refitting old chemical building for gymnasium.....	5,000	.....
Current expenses.....	25,000	35,000
Books and periodicals for the library.....	2,500	2,500
Salary of state veterinarian.....	1,800	1,800
Farmers' institutes.....	2,500	2,500
Repairs of buildings and grounds.....	3,000	3,000
Freight and hauling coal.....	1,800	1,800
Water supply.....	1,000	1,000
Rent of President's house.....	360	360
Care of funds.....	150	150
Regent's mileage and per diem.....	2,500	2,500
Farm Department:		
Pure-bred stock.....	10,000	.....
Steers and hogs.....	10,000	.....
Dairy equipment.....	5,000	.....
Mechanical Department:		
Engineering laboratory.....	3,000	.....
Carpenter shop.....	4,000	.....
Machine shop.....	2,000	.....
Boiler and engine room.....	1,000	.....
Foundry.....	1,000	.....
Equipment of other departments.....	5,000	.....

TO REPLACE THE BURNED BUILDING.

"In this age it should not be necessary to make any plea for the sciences of chemistry and physics. The tremendous material progress of the closing century is but the crystallization of the progress in these two sciences. They are, in fact, fundamental to all other sciences, and the more radical thinkers, even in the realm of psychology and ethics, are seeking to find in chemical equations or physical formulæ expressions for mental processes. Difficult and uncertain as the outcome of such speculations must be, there can be no other view taken of the complex processes of material

nature, both organic and inorganic. Students of the biological sciences are recognizing more and more the vital necessity for extended study of chemistry. The germination of seeds, the transportation of nutriment from cell to cell, the absorption of food from air and earth and its elaboration into leaf, branch, flower and fruit is but a succession of physical and chemical phenomena. Even the direction taken by rootlets is the result of chemical action, and the upward direction of the stem is determined by gravitation.

"The old chemistry building of the Agricultural College had long been inadequate to the needs of the institution, and efforts have been made for years to get an appropriation for a new one. Physics has been even worse off, having no laboratory facilities whatever, being in this respect behind a first-class high school. With the destruction of the chemistry building last May by fire the Chemical Department was left with no quarters. Agricultural Hall had just been completed, and a portion of the chemistry work is now done there, another part is temporarily provided for in the dairy barn, and the Experiment Station laboratory is crowded into the armory. None of these quarters are at all adapted to the needs of chemical work, and this, with the scattered condition of things, makes successful, or even fairly satisfactory, results very difficult to obtain. With the opening of the winter term, when the entire agriculture building will be no more than adequate for the classes in agriculture, the problem of providing for classes will be a very serious one.

"The crowding of classes is felt, and will be felt not only by the departments named, but by all. It is literally true that there is scarcely a department of the College that is not in need of more room. Some feel the need far more keenly than others. Next to those who have none perhaps the Department of Veterinary Science and Zoölogy is cramped the worst. Entomology has been pushed out of its classroom to provide additional reading room adjacent to the library. Without attempting to enumerate at this time all of the needs of the institution in the way of buildings merely, it is painfully evident to every observer that there is imperative need for more, and provision in part for this necessarily centers itself about the chemistry-physics building.

"The pioneer stage of Kansas is long past, and a wise economy in public affairs demands that in the construction of public works of any kind, permanency and fitness should be the first consideration. In the case of a building for a department, provision of

barely enough for present needs is wasteful extravagance instead of commendable economy. The attendance at the Agricultural College is increasing at the rate of about twenty-five per cent per annum, and quarters that would be adequate now will be out of the question in ten years, or even five. It seems evident that a building should be erected that will be sufficient for the Departments of Chemistry and Physics for a considerable number of years, and that any rooms not required at the present time be used to supply in part the pressing needs of other departments. Then when these are provided for by later appropriations, the increased needs of chemistry and physics can be again met in their own building.

"This building should be a model of its kind. The best is none too good for Kansas. A chemistry building is necessarily an expensive one, because of the extra provision required for proper ventilation. Both chemistry and physics require a very solid foundation and superstructure to prevent the least jarring of delicate apparatus. They also require close fitting of joints to prevent access of dust as much as possible. All this means the best construction that modern methods can provide. It should be as nearly fire-proof as practicable, and should possess within itself the means of fire extinguishment.

"The appropriations made by the legislature for the Agricultural College should be looked upon as investments and not as expenditures. Agriculture produces several times as much wealth in Kansas as all other industries and trades combined. If in any part of the world a gold field could be discovered capable of yielding yearly one-half as much wealth as is annually produced out of the soil of Kansas, mankind would grow wild over it. Those who are digging better than gold from the prairies of Kansas are deserving that a liberal share of the taxes gathered from this wealth shall be bestowed upon the Agricultural College for the further development of the knowledge requisite for the largest and most profitable production from the soil and for the practical higher education of the young people from Kansas farms. The legislator who appreciates these facts and acts upon them intelligently will deserve well of his own generation and will deserve a niche in the temple of fame with Morrill and Hatch.

"It is hoped that every reader of this paper will make it his personal mission to call the attention of prospective members of the legislature to this important matter and insist that he investigate it before the rush and routine of new duties at Topeka make exacting demands upon his attention."

THE INDUSTRIALIST.

BOARD OF REGENTS.

Published weekly during the College year by the
Printing Department of the

KANSAS STATE AGRICULTURAL COLLEGE.

Manhattan, Kansas.

☆ ☆ ☆

PRES. E. R. NICHOLS..... Editor-in-Chief

PROF. J. D. WALTERS..... Local Editor

PROF. J. T. WILLARD..... Alumni Editor

HON. E. T. FAIRCHILD, President... Ellsworth

HON. J. S. MCDOWELL, Vice-President,
Smith Center

HON. W. T. YOE, Treasurer..... Independence

HON. WM. HUNTER, Loan Comm'r, Blue Rapids

HON. MRS. SUSAN J. ST. JOHN..... Olathe

HON. CARL VROOMAN..... Parsons

HON. J. M. SATTERTHWAITE..... Douglass

PRES. E. R. NICHOLS, Sec. *ex-officio*.

LOCAL NOTES.

Professor Harper is enjoying a visit by his mother, who arrived here last Tuesday from Manitou, Colo.

Prof. A. S. Hitchcock has an article in *The Plant World*, on "Collecting Sets of Plants for Exchange."

Prof. J. D. Walters is building a new stone barn and making other improvements at his suburban home, north of the city.

The Sunday issue of the *Topeka Daily Capital* contains an article by Pres. E. R. Nichols, entitle "Education in its Truest Sense."

Thanksgiving day on November 29; College session on Monday, Tuesday and Wednesday; vacation on Thursday, Friday and Saturday.

The Horticultural Department has completed the necessary fall and winter work of the vineyard and has done most of its arboretum and orchard work.

The Farm teams are kept busy this fine weather hauling alfalfa from the Higinbotham farm on the Blue bottoms. Seventy-five tons were bought there, which means quite an amount of hauling.

The College band and several students will take part in the program of the presentation of medals to the boys of the Twentieth Kansas, on November 22, by Lew Gove Post, of Manhattan.

President Nichols has moved into the Dewey mansion, corner of Poyntz and Juliette Avenues, and Professor Eyer is moving into the quarters vacated by the President, near corner of Fourth street and Houston.

The museum of the Veterinary Department was recently enriched by the donation of two interesting specimens—a colt with a single median eye, the result of embryonic fusion of the paired eyes; also, a two-headed calf. The first specimen was presented by Dr. C. S. Orr, of Manhattan.

The annual meeting of the Kansas State Dairy Association will be held in Topeka, January 7, 8, and 9, 1901. The first session will occur on the evening of January 7. January 8 will be patrons' day. January 9 will be patrons' and butter makers' day, and will close with a banquet in the evening.

The new side-walk from the main entrance to the junction of the roads from the Main building and Agricultural Hall is nearly completed. It will be a valuable improvement when finished, and meet a long felt want.

The football game between the Royal Purple eleven of Salina Wesleyan University and the K. S. A. C. eleven, last Saturday afternoon, in Manhattan athletic park, resulted in a victory for K. S. A. C. The game stood 30 : 0.

Pres. E. R. Nichols and Mrs. Nichols have been in New Haven, Conn., during the past week attending the annual meeting of the Association of Agricultural Colleges and Experiment Stations. They will probably return to-day or to-morrow.

When the city bought an engine and stone crusher last spring, there was a strong sentiment in favor of macadamizing Poyntz Avenue to the city park and then north to the College gate. We believe the public is willing to pay for this improvement.—*Mercury*.

A car-load of oats was bought by the Farm Department last Saturday and unloaded. Two of the large barges used by Mr. Dewey at his feed yards were kindly loaned to use in unloading. With these wagons one hundred twenty-five bushels was hauled at a load, which made it possible to unload the car in a day with two teams.

Geo. T. Fielding, of Manhattan, has shipped the big car of alfalfa hay ordered by the New York Zoölogical Garden last Tuesday night. The car contained twenty tons of hay and had a big banner on the side which read as follows: "This car contains Kansas alfalfa hay for New York Zoölogical Park, from Geo. T. Fielding, Manhattan, Kan."

The Farm Department has bought some Kafir-corn heads from Mr. J. E. Thayer, living east of town, and hauled them in to thrash with the new machine, Aultman Taylor Co.'s "Dixie." Though there is only a ten-horse motor at the barn, with heavy shafts and belt, the way Kafir goes from the Harvey feeder to the baskets (half-bushel measures proved to small) is a joy to see.

The Veterinary Department is still sending out blackleg vaccine to farmers and stock raisers all over the State. The demand is constantly increasing. As an indication of this may be stated that the amount estimated to be sufficient to last until January was exhausted early in the present month. The department charges one cent per dose, to defray the expenses of postage and packing.

Quite a force of students have been at work getting everything in shape about the barn for winter. Over twenty-five worked last Monday, caring for the stock, husking corn, setting tanks, repairing fence and sheds, fanning beans, working on records, hauling dirt, etc. One of the feed yards was low and always got muddy. Over one hundred loads of dirt put it in good shape.

The *Central Christian Advocate* contains an excellent discourse on "Happiness, or The Art of Living," by Prof. F. C. Lockwood. The article is accompanied by a half-tone engraving of the professor.

The Butler Company, of Butler, Ind., has sent to the Farm Department two sizes of their tank heaters for trial. One from the Kelly Foundry and Machine Company has also arrived. The Farm Department has seven tanks for watering the stock. Each tank is provided with an automatic valve which keeps the tanks just full of water, and each will be provided with a tank heater to keep ice from forming on the tank.

The second lecture of the College lecture course was delivered by Hon. J. P. Dolliver, Friday, November 16, in the College chapel. The chapel was crowded, as usual, and the lecture, by the distinguished orator, is pronounced as one of the best ever delivered in Manhattan. The next entertainment of the course will be given by Lovett's Boston Stars, on the evening of Monday, November 26. The troupe consists of Mr. Frank Reynolds, long before the public as the "Singing Humorist;" Miss Katherine Hutchinson, soprano; Miss Georgia Harvey, reader; and Miss Emma F. Dunham, violinist. Every member of the company is known as a highly accomplished entertainer in his specialty, and as a whole they form an original up-to-date concert company of a high order.

ALUMNI AND FORMER STUDENTS.

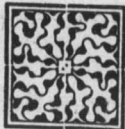
R. H. Pond, '98, has recently been appointed to the position of assistant botanist and pathologist in the Maryland Agricultural College.

Mary L. Waugh, '99, is furnishing weekly articles for the *Kansas Farmer*, upon food topics. By the care in their preparation and their regard for scientific truth they afford a refreshing contrast with many articles upon domestic science, so-called.

Nellie S. Kedzie, '76, delivered an address at the dedication of the Woman's Building at the Michigan Agricultural College, recently, which was pronounced by one of the prominent regents the best he ever heard. In addition to her regular work as professor of domestic economy in Bradley Polytechnic Institute, she is giving weekly lectures at Purdue University, Indiana.

Judson Criswell ['89] and Miss Isabella Frisbie ['94], whose marriage we notice elsewhere, are well known in Manhattan as young people of most excellent character and their friends are many. Both bride and groom have received thorough training for life's work in the Agricultural College, Mrs. Criswell having taught several years in the South Dakota Agricultural College. Mr. Criswell, known by his friends as "Jud," has been for some time employed in the feed department of Purcell's store. The wedding was an informal one, only the home folks being present, no cards being issued.—*Mercury*.

KANSAS STATE AGRICULTURAL COLLEGE



A SPLENDID OPPORTUNITY

For Farmers and Farmers' boys who cannot spare the time or money to take our regular four-years course.

Farmers' Short Course

JANUARY 3
TO
MARCH 22, 1901

With money making as the object, instruction is given in crop production, feeding and breeding, orcharding and gardening, farm shop work, diseases of farm animals and the study of insects, bacteria, chemistry and physics.

This work will pay the farmer, the farmers' boy and the hired man. We want YOU to induce at least one student to attend.

For full particulars address

Pres. E. R. NICHOLS, Manhattan, Kan.



WEBSTER'S INTERNATIONAL DICTIONARY

NEW EDITION

JUST ISSUED

NEW PLATES THROUGHOUT

Now Added **25,000 NEW WORDS**, Phrases, Etc.

Rich Bindings • 2364 Pages • 5000 Illustrations

Prepared under the supervision of W. T. Harris, Ph.D., LL.D., United States Commissioner of Education, assisted by a large corps of competent specialists.

BETTER THAN EVER FOR GENERAL USE

Also Webster's Collegiate Dictionary with Scottish Glossary, etc.
"First class in quality, second class in size."

Specimen pages, etc., of both books sent on application

G. & C. MERRIAM CO., Publishers, Springfield, Mass., U. S. A.

GET
THE
BEST

VOLUME 27.

NUMBER 9.

THE INDUSTRIALIST

ISSUED WEEKLY BY

KANSAS STATE
AGRICULTURAL COLLEGE



Editor-in-Chief,

Local Editor,

Alumni and Former Students,

Pres. E. R. Nichols

Prof. J. D. Walters

Prof. J. T. Willard



Published by
PRINTING DEPARTMENT
J. D. Rickman, Supt.

ENTERED AT POST-OFFICE AT MANHATTAN, KAN., AS SECOND-CLASS MATTER
ACT OF JULY 16, 1894.

Historical Society

BOARD OF INSTRUCTION.

- ERNEST R. NICHOLS, A. M.** (University of Iowa), President, Corner Poyntz and Juliette aves
JOHN D. WALTERS, M. S. (Kansas State Agricultural College) North end of Sixth street
 Professor of Industrial Art and Designing.
ALEXANDER B. BROWN, (Boston Music School), A. M. (Olivet) 847 Houston street
 Professor of Music.
JULIUS T. WILLARD, M. S. (Kansas State Agricultural College) 1211 Moro street
 Professor of Applied Chemistry.
ALBERT S. HITCHCOCK, M. S. (Iowa Agricultural College) .. College Hill, 2 miles N. W. of College
 Professor of Botany.
FREDRIC A. METCALF, O. M. Superioris Honoris (Emerson Coll. Oratory) 6th and Poyntz ave.
 Professor of Oratory.
GEORGE F. WEIDA, Ph. D. (Johns Hopkins) 517 Fremont street
 Professor of Pure Chemistry.
HENRY M. COTTRELL, M. S. (Kansas State Agricultural College) College Campus
 Professor of Agriculture, Superintendent of Farm.
MISS MINNIE A. V. NELLIE STONER, (Boston N. S. of H. A.), B. S. (S. D. A. C.) Fourth and Osage
 Professor of Domestic Science, Dean of Women's Department.
JOSEPH D. HARPER, M. S. (Rose Polytechnic Institute) Houston st., between 6th. and 7th. streets
 Professor of Mechanical Engineering, Superintendent of Shops.
EDWIN A. POPENOE, A. M. (Washburn) Seventh and Osage streets
 Professor of Horticulture and Entomology, Superintendent of Orchards and Gardens.
FRANK C. LOCKWOOD, Ph D (Northwestern) Corner Fifth and Humboldt
 Professor of English.
BENJ. L. REMICK, Ph. M. (Cornell College) Fourth and Osage
 Professor of Mathematics.
BENJ. F. EYER 512 Houston street
 Professor of Physics and Electrical Engineering.
C. E. GOODRELL, A. M. (Franklin)
 Professor of History and Economics.
MISS HARRIET HOWELL, (Pratt Institute) Corner Poyntz and Juliette avenues
 Superintendent of Domestic Art.
JOSHUA D. RICKMAN, I. T. U. 911 Osage street
 Superintendent of Printing.
MISS JOSEPHINE T. BERRY, A. B. (Kansas University) Sixth street and Poyntz avenue
 Librarian.
B. S. MCFARLAND, A. M. (Miami) Fourth and Osage
 Principal Preparatory Department.
MISS FLORENCE BALL N. E. Cor. Juliette and Fremont streets
 Director of Physical Training.
MISS LORENA E. CLEMONS, B. S. (K. S. A. C.), Secretary Corner Fourth and Laramie
SEPTIMUS SISSON, S. B. (Chicago), V. S. (Toronto) Cor. Manhattan avenue and Moro
 Associate Professor of Veterinary Science and Biology.
D. H. OTIS, M. S. (Kansas State Agricultural College) College Hill
 Assistant Professor of Dairying.
WILLIAM ARCH MCKEEVER, A. M. (Kansas University) 621 Houston street
 Assistant Professor of English and Philosophy.
MISS JOSEPHINE C. HARPER, Instructor in Mathematics Corner Sixth and Pierre streets
MISS ALICE RUPP, (Indiana State Normal), Instructor in English
CHARLES EASTMAN, Cadet Major and Acting Commandant 611 Poyntz avenue
William L. House, Foreman of Carpenter Shop Corner Sixth and Colorado
Chas. W. Pape, M. S. (K. S. A. C.), Ass't in Zoölogy and Ass't Curator Museum, 918 Osage st
R. W. Clothier, M. S. (K. S. A. C.), Assistant in Chemistry, Fremont, between Fifth and Sixth
Margaret J. Minis, Assistant Librarian Fourth and Moro streets
R. H. Brown, M. T. (Kan. Con. of Music), B. S. (K. S. A. C.), Ass't in Music, 817 Houston street
J. M. Westgate, M. S. (K. S. A. C.), Assistant in Botany, Cor. Manhattan avenue and Vattler
May Secrest, B. S. (K. S. A. C.), Assistant in Domestic Art, Cor. Leavenworth and Seventh
Wm. Anderson, B. S. (K. S. A. C.), Assistant in Mathematics, Cor. Humboldt and Juliette ave
Gertrude Barnes, Assistant Librarian Cor. 9th and Moro
Albert Dickens, B. S. (K. S. A. C.), Assistant in Horticulture, Fremont and Manhattan avenue
William Baxter, Foreman of Greenhouses
J. G. Haney, B. S. (K. S. A. C.), Ass't in Feeding and Field Experiments, Manhattan ave and Kearney
Mary Pritner, B. S. (K. S. A. C.), Assistant in Domestic Science Cor. 7th and Leavenworth
Theodore Lindquist, M. S. (Northwestern), Ass't Physics Cor. Fifth and Humboldt
W. M. Sawdon, B. S. (Purdue), Assistant in Printing Juliette and Houston
O. I. Purdy, B. S. (K. S. A. C.), Assistant in Mechanics 1216 Fremont street
Ada Rice, B. S. (K. S. A. C.), Assistant in Preparatory Department Osage and 8th. street
Louis Wabnitz, Foreman Iron Shops 5th and Osage
Henry Van Leeuwen, (Univ. Wis. D. S.) Inst'r in Cheese Making Manhattan and Kearney
E. W. Curtis, (Univ. Wis. D. S.) Instructor in Butter Making
Florence L. Grant (Mass. Normal Art School), Assistant in Drawing Fourth and Osage
A. T. Kinsley, B. S. (K. S. A. C.), Assistant Veterinary Department, Tenth and Kearney sts
Elizabeth Agnew, B. S. (K. S. A. C.), Assistant in Domestic Science, Ninth and Moro streets
Jacob Lund, M. S. (K. S. A. C.), Engineer Cor. Tenth and Kearney
C. Jeanette Perry, B. S. (K. S. A. C.), Executive Clerk Corner Colorado and Fifth
W. R. Lewis, Janitor N. E. corner Main College Building
Archie Huycke, Secretary to President Manhattan avenue and Kearney

Pamela
CK

THE INDUSTRIALIST.

VOL. 27.

MANHATTAN, KAN., NOVEMBER 27, 1900.

No. 9

THE FIRST CAPITOL OF KANSAS.

THE territorial history of Kansas is unique; it is separate and apart, different, from that of any other state. For more than two hundred years in colonies and states slavery had existed. During all these years there was a growing sentiment in its favor as well as one against it. The constitution indirectly recognized slavery under the name of persons "held to service or labor," and in the clause "three-fourths of all other persons" for representatives and direct taxes; it also provided a way whereby the foreign slave trade might be abolished by law. The absence of the word "slave" from the original document was proof of an opposition as well as ominous. The invention of the cotton-gin shortly after the adoption of the constitution extended the cotton area, and slavery became more and more profitable. The Louisiana Purchase extended slavery still further, and a balance of slave and free states was sought to be maintained by alternate admission of one and then the other. One outgrowth of this purchase was the Missouri Compromise which, by its supporters, was deemed a final settlement of the entire business, and thereafter there would be only contentment and quiet. In the future, government and its people would be happy, life and business go on uninterruptedly, the golden era and the joyous days of the millennium would remain forever. It was only the poetic imagination that made Banquo's ghost stalk at midnight. Now his manes had been propitiated, the ghost would no more frighten, no more disturb, nor wander ever again, but remain in his own proper abode.

By 1845 it was seen the free states must predominate, and then Texas was taken into the Union. The Mexican War followed, with its vast accession of territory, and the contending forces were again in line. The compromise of 1850 followed and a strong reaction set in in the free states.

Four years later cotton had become so nearly king that the Missouri compromise was overthrown and the Kansas-Nebraska

act was passed; all the heretofore supposed restraints put upon the extension of slavery were removed. The advocates of slavery were possessed of a singular zeal and determination to extend its benign influence, for the relation of master to slave was the divine method of civilizing, though not of enlightening the sons of Ham. Sermons were preached from the text, "Servants, obey your masters," and those who desired easily believed and earnestly argued that slavery was a divine institution and ought to be cherished and upheld as a blessing to the African, for was he not taken from heathen lands and made a Christian? Thus while it brought to the black man a bettered condition it enabled the white man to improve his own, and thus the system worked for their mutual improvement and advantage. But the slave owner naturally grew dictatorial also, and could see no good in anything nor any one that opposed his peculiar views upon the subject.

While in slave-holding communities this sentiment grew and was honestly maintained by its advocates there grew also in free communities a corresponding opposition not only to its extension but a belief that the institution itself was wrong in conception as well as in practice, and that its ill effect upon the white was greater than the good, if there be any, upon the black. Had not Washington at his death, Randolph, and others freed their slaves? Had not Jefferson, in view of slavery, written "I tremble for my country when I remember God is just?"

After the compromise of 1850 liberty laws had been passed by some states, Webster had gone down beneath the flood of rising opposition. After the passage of the Kansas-Nebraska act political parties were reorganized and the entire country was profoundly agitated. It was not a poetical ghost that alarmed the country—it was a veritable spectre that stalked the land and shook its gory locks.

Into Kansas came the contending principles and the contending forces; here came the strong and the courageous, old and young, bibles and rifles. There came also a luminous figure who will be remembered "while his soul goes marching on." Here, also, were murder, maraudings, ballot-box stuffing. The right or wrong of these things is not here discussed—only the conditions are stated.

For about four months after the organization of the territory there was no general government. Andrew H. Reeder was the

first territorial governor. He came to Fort Leavenworth October 7, 1854, where a public reception was given him. He immediately made an extended trip through the territory to ascertain the condition and needs of the people. During January and February, 1855, a census preliminary to an election of members to the council and house of the territorial legislature was taken. This having been completed, the governor ordered an election to be held March 30, 1855. Ballot-box stuffing carried the day, there being cast, as shown by the returns, 1410 legal and 4908 illegal votes. In one precinct a Cincinnati directory furnished many names. An old settler said to the writer of this article, many years after the occurrence, that he saw, for this particular precinct, the polls after they were made, and this two weeks before the election took place. The poll-books were not then in the territory.

The organic act empowered the governor to set aside the election as tainted with fraud, and he was urged to do so. The proslavery element having triumphed, the members elect demanded certificates of election from Governor Reeder and threatened assassination if refused. He examined election returns while cocked pistols were pointed at his breast. He knew there was fraud, but issued the certificates, except in six districts. These were set aside because of informalities in the returns. Elections were held in these districts May 22. In five the free-state men won; at Leavenworth five hundred non-residents came across the river and voted. The governor issued his proclamation for convening the legislature at Pawnee.

The eastern boundary of the Fort Riley reservation was surveyed in the summer of 1854 and located about one mile east of the fort, on One Mile creek. Below this stretched the narrow but beautiful Kaw river valley, and here, not far from the eastern boundary line, some free-state men, together with some officers at the fort, proposed to found a town. Colonel Montgomery, post commandant, was the leader. It was believed that a town at this place would aid the settlement of that region. The town was laid out in the fall of 1854 with the knowledge and consent of the authorities at Washington. It was called Pawnee. Governor Reeder bought some shares of the town company. In view of the coming of the legislature, hotels had been built for the accommodation of the members. But complaint reached the secretary of

war, Mr. Jefferson Davis, and a new survey was had, giving the same boundary. A map of this survey was prepared. This map showed where the line ought to be if Pawnee was to be included in the reservation. The secretary of war accepted the survey along the line that would include Pawnee. The President approved and the secretary issued orders for the removal of the inhabitants. This order was not enforced until the fall of 1855. However, most of the inhabitants complied; others had their houses torn down.

Here, July 2, 1855, the first territorial legislature met in a stone building that still stands—the first Capitol of Kansas. At first there were twenty-eight pro-slavery and eleven free-state men. One of the free-state men repudiating the body resigned, nine were immediately unseated, the eleventh resigned July 22. On the second day of the session the legislature located the capital at Shawnee Mission, three-quarters of a mile from the State line and about two miles from Westport, now a part of Kansas City, Mo.

The organic act empowered the governor to locate the capital; the people of Pawnee had asked for it and had gone “to considerable pains to prepare accommodations for the members, and had expected it.” The free-state men said the arrangements for convenience and comfort were ample. The Rev. Thos. Johnson, president of the council, stated “nearly all the members of the legislature had to camp out in the open sun, and do their own cooking, without a shade tree to protect them; for there were no boarding-houses in the neighborhood excepting two unfinished shanties.” But the Reverend Johnson had lived at Shawnee Mission for more than twenty years in large and ample quarters built by the government, where, amid beautiful forests the winding streams fed by ever-flowing springs were a continual pleasure and a joy, and his opinion should be taken with some allowance.

The old stone Capitol still stands, roofless, floorless, windowless, doorless. Near by is the public highway, still nearer the railroad, the whistle of whose engines daily wakens the echo of the near-by hills, but the traveler gives little or no heed to the place. Yet here a legislature enacted a scene of the great tragedy that ended, ten years later, at Appomattox. The summer sun still shines upon and the winter winds whistle about the bleak walls, but the actors are not there. Forty-five years have come

and gone; at Chicamaugua, at Missionary Ridge, at Gettysburg, monuments have been erected to commemorate heroic actions of our countrymen. But here stands as truly a monument that marks the pathway to Harper's Ferry in 1859, and thence to many a bloody battlefield thereafter, as any that have since been erected. Recently there came into the hands of the Kansas State Historical Society eleven acres of ground at Pike's Pawnee village, in Republic county. Here, ninety-four years ago, Captain Zebulon Pike hauled down the Spanish flag and first hoisted the flag of our country. That spot ought to be preserved. Equally proper would it be for the society to obtain possession of the first Capitol, preserve it and the remains of the few buildings still left. The hope is expressed that some measure, with this end in view, will be taken by the incoming legislature or by the Historical Society.

B. S. MCFARLAND.

LATERAL CURVATURE OF THE SPINE.

IN THE many hundred measurements taken by me of girls between the age of twelve and twenty-six years about two-thirds of them have had a curvature of the spine; a fact which very few mothers had noticed.

Lateral curvature of the spine—Scoliosis—a deformity which is characterized by lateral deviation and distortion or rotation of the spinal column, nearly always accompanied more or less by exaggeration of the normal antero-posterior curves.

A very much larger proportion of the curvatures are found in the female than the male. Messrs. Bradford and Lovett, in their "Orthopædic Surgery," 1890, collected 2342 cases of lateral curvatures, 363 of which were male and 1979 female. The much larger proportion of girls than boys afflicted, aside from being handicapped by their dress, do not have enough physical exercise, such as hockey, tennis, cricket and such outdoor sports. The muscles of the girl either never develop as they should or become weak. They have not sufficient strength to hold themselves erect and to restore the equilibrium of their curved backs out of school hours. The ages at which the greater proportion of the curvatures develop are between five and sixteen years, the greater number developing at the age of twelve years.

The general cause of lateral curvature of the spine is a weakness of the spinal muscles, combined with the long-continued sitting or standing in stooped or relaxed positions, such as standing on one leg, sitting, writing, or reading with the trunk leaning or twisted to one side. Perhaps the one position which is the initial cause of lateral and other curvature, not due to diseased bone, is the writing position. Ask any child to sit down and write his or her name and notice the position. Nine cases out of ten, the child will take a position corresponding to the curvature, except that it will be highly exaggerated. In most cases the whole spine is usually convex to the left. This is found to be exactly the posture in writing. In more advanced cases, where the usual type is to have the dorsal curve with convexity to right, the child in writing generally raises the right shoulder, and this to a far greater degree than in the ordinary posture of lateral curvature. The position in writing is due to the very unfortunate custom of the slanting handwriting, from left to right obliquely upwards. The natural direction for writing really ought to be in the opposite direction, as anyone will recognize by sitting down to a desk, perfectly erect, with hands placed symmetrically on the desk, and then attempt to write without screwing the right hand or twisting the body. The vertical writing which is being used in so many of the schools is a blessing to the younger children. The desk of each child should receive careful attention. The problem is to have a seat of which the length and breadth is proportional to the under surface of the thighs and buttocks of the child; to place it at such a height that the feet of the child may rest flat upon the floor when the knees are bent to a right angle, and to provide a rest that will support the child's back, whether at rest or actively engaged. The desk should be the right height and slope. The under surface must not cramp the knees, and above all it must not be placed so far forward in relation to the seat as to require undue leaning forward by the sitter.

There are many causes of lateral curvature of the spine, some of which are rapid growth, hereditary, delicate health, after acute fevers, and rickets. Mothers often notice that one hip or shoulder blade grows out in a child. Dressmakers are often the ones to call attention to the fact that the measurements are different on the two sides of the trunk. Then is the time to take such cases in hand; not wait and hope you will out-grow it. The time when

there is no bone deformity is the only time that a complete cure is possible.

What can be done for the many curvatures? Have them lie on their back for several hours daily, as is sometimes prescribed for patients? Put the patient in a jacket? No. The principle on which to work for such cases is to reëducate the muscles of the body; improve position of sitting and standing at all times; attention to dress; systematic training of the spinal and other muscles, including the thoracic muscles; attending to general health. These points carefully carried out may restore one to the symmetry that is man's birthright.

FLORENCE BALL.

EDUCATION IN ITS TRUEST SENSE.

THE Topeka *Daily Capital*, under the above head, in its "Lay Sermons," publishes, on November 11, the following by President Nichols:

"Education is the harmonious development of all of one's faculties—moral, mental and physical. Educators are just beginning to realize the full meaning of this definition; at least are just beginning to provide for instruction along all of these lines. The attempt to educate along any one line must prove a failure. The church schools of the middle ages were capable of educating monks and nuns, men and women to withdraw from the world, but not men and women to take an active part in the affairs of the world. The goody-goody young man is an example of the one-sided development. He may be good, but he is good for nothing as a citizen. The world needs goodness, but it needs much more. The tendency for the past four or five centuries has been to educate the mental and neglect the physical side of man's nature. The result was generally a theorist; a man who could succeed in his chosen profession, but utterly helpless outside of it. The failure of many college graduates in the past has been due to this system of education. The young man or woman with muscles trained to respond readily and accurately to each impulse of a thinking mind under the control and guidance of a well-developed, moral nature is well fitted, indeed, for life's work. The State has a right to ask of every graduate: Is he better prepared to take care of himself, less likely to become dependent upon the State;

is he a better man, a better neighbor, a better citizen, more patriotic, more interested in the affairs of the State and of the Nation; not too good to mix with his fellowmen, and yet good enough to uplift and help all with whom he comes in contact; is he strong morally, mentally and physically? The world does not need monks to-day; it does not need the long-faced, sad-eyed scholar, nor the pugilist. It does need, however, all three in one. It needs happy, hopeful, healthy men and women."

The Experiment Station desires to increase its usefulness by extending the knowledge of its work. One means looking to this end is the issue of press bulletins. As the name implies, these are not for general distribution, but are designed for the press. The special object of this notice is to urge the reader to use his influence, and ask others to do the same, to induce the local papers to reprint these bulletins regularly. The papers will undoubtedly be glad to print them if convinced that the farmers wish them to, and a few requests will be sufficient. The press bulletins are short, timely, readable articles, consisting wholly or in part of statements of results of experiments or observations of the Experiment Station force. They are disinterested, and are believed to be thoroughly reliable. The first thirty-four press bulletins of the Station were reprinted as bulletin No. 86. This was received with so much favor that copies available for distribution have long since been exhausted. Another collection, lately issued as Bulletin No. 99, includes all the remainder issued up to June 30, 1900. While some of them may be of ephemeral interest, others contain valuable material not likely to be printed elsewhere soon, and the Station Council feels that, by thus sending them to our regular mailing list, they will fall into appreciative hands. The press bulletins, as issued, are sent to the newspapers of the State, to a considerable number of agricultural papers, to certain public officials, and to some other addresses where they will be brought to the attention of the public. The regular bulletins of the Station are sent to all who apply for them. Address Agricultural Experiment Station, Manhattan, Kan.

THE INDUSTRIALIST.

Published weekly during the College year by the
Printing Department of the

KANSAS STATE AGRICULTURAL COLLEGE.

Manhattan, Kansas.

☆ ☆ ☆

PRES. E. R. NICHOLS.....Editor-in-Chief

PROF. J. D. WALTERS.....Local Editor

PROF. J. T. WILLARD.....Alumni Editor

BOARD OF REGENTS.

HON. E. T. FAIRCHILD, President....Ellsworth

HON. J. S. McDOWELL, Vice-President,
Smith Center

HON. W. T. YOE, Treasurer.....Independence

HON. WM. HUNTER, Loan Comm'r, Blue Rapids

HON. MRS. SUSAN J. ST. JOHN.....Olathe

HON. CARL VROOMAN.....Parsons

HON. J. M. SATTERTHWAITE.....Douglass

PRES. E. R. NICHOLS, Sec. *ex-officio*.

LOCAL NOTES.

The cadet battalion has 465 uniformed members.

The first years had a party in Agricultural Hall, Monday night of last week.

The "Kansas Kook Book by Kansas Kooks" will be ready for sale by December 10.

The carpenter shop is building five new walnut bookcases for the Entomological Department.

Marshall county has twenty-three students in the regular four-years courses at the Agricultural College.

Mr. Huffman and wife, of Little River, Kan., were shown around College Saturday by Assistant Pape.

There will be a football game between the St. Marys' eleven and the K. S. A. C. team, on Thanksgiving day.

Assistant J. G. Haney and Miss Berry attended farmers' institutes at Eureka and Matfield Green last week.

Professor Otis received a handsome new desk last week and spent Thursday in moving his office to the library room in Agricultural Hall, where he will make it his headquarters during the winter term.

Mr. James Gillispie, editor of the *Reville*, Memphis, Mo., was a very welcome visitor at the Printing Department Saturday morning. He appeared well pleased with the appearance of everything about College.

The officers and non-commissioned officers of the College battalion will have a military concert and ball, Wednesday evening, November 28, in the Union Club Hall. Brown's Military Orchestra will furnish the music.

Professor Otis is writing an illustrated fifty-page article on "Dairying in Kansas" for Secretary Coburn's next biennial report. The article will be interesting and valuable to every Kansas farmer and dairyman.

C. C. Frevert, of Holyrood, Thurman Shockley, of Tonganoxie, and Emil Kesi, of Cuba, Kan., have sent letters to the Farm Department expressing the intention of returning this winter for the second term's work in the Farmers' Short Course.

The Agricultural College was represented at the convention of the Y. M. C. A., at Wichita, November 22-26, by the following students: S. J. Adams, A. W. Buhrer, R. J. Courter, Ray Felton, A. H. Leidigh, P. E. Mills, H. Tracy, and W. S. Wright. The boys were joined by D. L. Kent and Hayes Coe after reaching Wichita.

The Faculty has lately adopted two regulations that will be of interest to many of the students. The first provides that not more than two-thirds of the work required for the M. S. degree can be taken in any one department. The second provides that all students who have failed in two or more studies at mid-term shall be considered to be on trial until the end of the term, and if they fail again in two full studies, shall not return without the special permission of the Faculty.

Park Place dormitories are progressing nicely. The first two buildings, containing about sixty student rooms, a large kitchen, a dining-room, a roomy assembly hall, several bath rooms and water-closets, etc., will be finished before the opening of the winter term. The whole group of four buildings which Mr. Dewey plans to erect will be heated from a central steam plant and lighted with electricity. The INDUSTRIALIST will give a detailed description of the dormitories in a future number.

The Experiment Station is in almost daily receipt of communications commendatory of its work, with which it would be easy to fill an entire issue of the INDUSTRIALIST. The following letter is a fair sample. "Your Bulletin No. 99 came to me yesterday. I have perused it partially and prize it very highly. I would like a dozen copies to send farmers in whom I am interested. I think the efforts of the station staff in your department are entitled to special credit, and do not believe they are appreciated generally."

The thirty-fourth annual meeting of the State Horticultural Society will be held in the rooms of the society on the ground floor, east side, in the north wing of the state-house, at Topeka, on Thursday, Friday, and Saturday, December 27, 28, and 29, 1900. Sessions open at 9:00 A. M., 1:30 P. M., and 7:30 P. M. Question box always open to everybody interested. After every day paper or report, discussion pertinent to the subject will be in order; all favors at will of presiding officer. As the society is collecting fruit for an exhibit at the Pan-American Exposition at Buffalo, N. Y., May 1 to November 1, 1901, therefore it hopes for a large display at this meeting. All exhibits of Kansas fruit suitable for above exhibit should be donated for such use and exhibitor will receive full credit. One hundred dollars is set aside for premiums. If the largest and best display is considered worthy by the committee it shall receive a cash premium of fifteen dollars. All other premiums given will be at the discretion of the committee, only guaranteeing that every worthy exhibit grown in the State, exhibited in name of grower, shall receive a reward. Articles may be sent in care of the secretary a day or two in advance.

This meeting is open to every one; the world is invited. All reports are open to discussion. No discussion will be had during the evening except by unanimous consent. Please register on arrival, and introduce yourself at once. Railroads will give the usual holiday rates. The program may be obtained by writing to Secretary W. H. Barns, Topeka, Kan.

The one hundred thirty head of experimental calves are becoming civilized now, and the rapidity with which they become accustomed to the feeders is surprising. Gentleness is a great factor in feeding, and great care is taken to get them tame. They will soon learn to line up and walk on the scales and stop to be weighed. Vaccination, tagging, etc., is not very gentle handling, and that is now over, and it is hoped the calves have forgotten the needle, pincers and rope.

The Faculty committee on failures have requested five students who failed in two or more full studies to withdraw from College. Six students were requested to quit public athletic work for the remainder of the fall term. Many students who seemed to be overworked were asked to drop one or more studies, and several others were changed to lower classes. As a whole, the students were satisfied that these acts of the committee were necessary for the good of the institution and especially for the benefit of the failing members.

ALUMNI AND FORMER STUDENTS.

Henrietta Willard-Calvin, '86, is conducting the children's corner in the Sunday issue of the *Capital*.

Julia R. Pearce, '90, is taking a course in mathematics and physics in California University, and at the same time teaching a number of classes. She is much pleased with her work and prospects.

C. D. Adams, '95, and Miss Bessie Moxley were married on Wednesday, November 14, at the home of the bride, in Osage City, Kan. At home after November 25, Kansas City, Kan., 719 S. Sixth Street.—*Students' Herald*.

Several of our graduates show their continued interest in the College by sending in from time to time the names of persons who would be benefited by the Experiment Station bulletins. Arthur Cranston, '90, is the most faithful in this respect. J. W. Berry, '83, R. S. Kellogg, '96, and H. A. Brous, '74, were also heard from within the past week.

The many Manhattan friends of "Jack" Harrison read with pleasure the Washington dispatch in Wednesday's papers that the postmaster-general has designated post-office inspector John R. Harrison, now postmaster at Havana, as acting director-general of posts in Cuba, pending the absence of director-general Fosnes, who is in New York City. The dispatch claims Mr. Harrison to

be a Salina man, which is far from true. Mr. Harrison grew to manhood in Manhattan, graduating from the Agricultural College in 1888, and was appointed a postal clerk from here by John A. Anderson. Manhattan people are justly proud of the distinction attained by one of their boys. — *Nationalist*.

Mrs. Eusebia Mudge-Irish, fourth-year student in 1874, who so nearly graduated as to seem almost like an alumna, and who is so well known to the students of the College of the early years, is about to remove to Kansas City, where her husband is practicing law. The last week has been an almost continuous round of receptions tendered her by her friends in the town, by whom she will be very much missed. Her father was the late Benj. F. Mudge, Professor of Natural Science in this institution, from 1865 to 1874. Her mother accompanies her to Kansas City, and with her departure the last link connecting the old College with the present seems to be broken. Her cheery presence has been an inspiration to all, both old and young, who have come within her influence.

The residence of Mr. and Mrs. A. Ridenour, on College Hill, was the scene of a beautiful home wedding, when, on Thursday evening, November 15, their daughter, Miss Etta Ridenour, was united in marriage to Mr. Arthur Plowman, of Jewell City. The ceremony was performed by Rev. Young, of Abilene. Early in the evening the guests began to arrive and soon the house was filled with the merry voices of old and young. Promptly at six o'clock Miss Emma Finley took her place at the organ and soon all were listening to the "Wedding Bells." While they were ringing, the bride and groom entered and stood in front of a background of chrysanthemums, asparagus and palms, which were arranged with unusual good taste. The bride was dressed in a dainty blue silk, with lace and ribbon trimmings. She carried a bouquet of bride's roses. The groom wore the conventional black. After the usual congratulations of relatives and friends, ample refreshments were served by three young ladies who proved to the guests that they had taken a course in domestic economy. The young couple received many handsome and valuable presents. The bride is a graduate of the K. S. A. C., taking her degree with the class of '96. For the last three years she has been in the employ of Mr. C. P. Dewey as bookkeeper. She is a young lady who has many warm friends who send their best wishes with her. Mr. Plowman was a former student at the College and is now one of the leading contractors and builders of Jewell City. The happy couple left the same evening for their new home in Jewell City, Kansas. — *Nationalist*.

SOME INTERESTING CLIMBERS FOR THE VERANDA.

(Press Bulletin No. 74, by Horticultural and Entomological Department.)

The genus *Clematis* comprises some climbers that recommend themselves both by neat growth and by a profusion of rich and often fragrant bloom. The range in these respects is sufficient to meet most demands for plants suitable for training to veranda pillars, as well as for screens to clothe unsightly walls or to hide other undesirable features in the view. The Kansas Experiment Station has had the more important plants of this group on trial for several years and the following notes upon the behaviour of some of them in this locality are presented as of interest to growers.

Clematis Jackmani, a hybrid form, with reasonable care is fairly hardy and satisfactory. Its flowers are four to six rayed, of a rich velvety purple, and when well grown measure four to six inches across. They are produced abundantly upon green wood of the season's growth, either from buds on old wood or from the crown of the plant after the old wood is killed back by the winter. It is best grown with an eastern or northeastern exposure, and wherever placed should be given a good bed of rich black loam, with winter protection for the roots in the form of a heavy mulch of well-rotted manure. The wood sometimes lives through the cold weather without serious injury, but it is better to lay down the vines and protect them with a good covering of clean soil, leaves, or hay. Upon replacing the vines in spring all weakened parts should be cut off, and for the largest flowers the sound branches should also be cut well back. This is the most satisfactory of the hybrid *Clematis* varieties.

Clematis Henryi, another hybrid, bearing six- or seven-rayed flowers, creamy white, and of the largest size, is a free bloomer and a striking plant, but has shown itself much less hardy here than the preceding, under the same treatment. Its general growth and cultural requirements are the same. Its showy and abundant bloom render it worthy to be grown in large pots or tubs, for veranda decoration, the plants being removed during winter to a cool cellar, to prevent injury by frost.

Clematis Viticella, a species native to southern Europe is grown with fair success. It is moderately vigorous, with lilac or purple flowers, four-rayed, spreading about two and one-half inches. Where variety is desired this species may be admitted, but for display it is quite inferior to its hybrid, *Jackmani*, and is little superior to it in hardiness.

Clematis Viorna, the "leather flower," native to the eastern United States, varies in the Southwest into the more beautiful red flowered form *Coccinea*. The form is a slender vine of neat growth, with solitary bell-shaped flowers about an inch in length. When well grown the plant attains a height of eight feet, and by its clean habit is well adapted to the purposes of a pillar plant. It is only of moderate hardiness, demanding a favorable situation and winter covering.

Clematis Pitcheri, growing wild in copses throughout eastern Kansas, while somewhat less neat in growth than the preceding, is greatly improved under cultivation, and deserves a place in every collection. Its flowers are single, bell-shaped, about an inch in length, and of a dull purple color, followed by conspicuous silky seed-clusters. It is perfectly hardy.

Clematis Flammula, the European fragrant "Virgin's-bower," has shown itself with us a very desirable wall plant. The growth is strong and in protected situations nearly or quite hardy, furnishing, in average seasons, its pure white, star-shaped, fragrant flowers in great profusion throughout late summer. The foliage is of a healthy rich green, the leaves remaining on the plant until midwinter. After flowering the plant is still conspicuous by reason of the abundant feathery seed-clusters.

Clematis Paniculata, a Japanese species much like the foregoing, is apparently still more vigorous and hardy, and on account of the large flowers, also more beautiful. Since its introduction it has become a great favorite as a veranda or wall climber, and it may be seen in good condition in many city and country places in eastern Kansas. The flowers being produced upon new growth, the best results are produced by close pruning, where the wood survives. This species and the *Flammula* do well when fully exposed to the sun, if their roots be in soil rich, deep and cool. Where but a single *Clematis* can be grown the *Paniculata* will prove the most satisfactory in ordinary treatment.

Clematis Virginiana, or "Native Virgin's-bower," grows wild in some of the eastern counties of this State, forming a strong woody vine of rampant growth, perfectly hardy in good soil. It is useful as a screen plant, though in beauty much inferior to the two preceding. Its abundant flowers are small, and creamy white, and are followed by numerous feathery seed-clusters. It spreads naturally by layering, and may soon be brought to cover a large space, appearing to greatest advantage in the less formal parts of the lawn, as on a rocky slope or against a rough wall. From such a base it will climb upward into the lower branches of an overhanging tree, when its true use and beauty are fully apparent.

E. A. POPENOE.

Kansas State

Agricultural College

DAIRY SCHOOL

JANUARY 3
TO
MARCH 22, 1901

*
*
THOROUGH instruction in milk production, private dairying, creamery butter making and factory and farm cheese making.

Tuition Free.

WE have expended \$25,000 for an Agricultural Building, \$6,000 for dairy apparatus and \$3,000 for dairy herd and shelter.

*
*
EVERY dairy farmer and every young man wanting a good position either on a dairy farm or in a creamery or

cheese factory should take this course.

Students: Get every one you know who should attend this course to come.

For full particulars address

Pres. E. R. NICHOLS, Manhattan, Kan.

VOLUME 27.

NUMBER 10.

THE INDUSTRIALIST

ISSUED WEEKLY BY

KANSAS STATE
AGRICULTURAL COLLEGE

☆ ☆ ☆

<i>Editor-in-Chief,</i>	- - -	<i>Pres. E. R. Nichols</i>
<i>Local Editor,</i>	- - -	<i>Prof. J. D. Walters</i>
<i>Alumni and Former Students,</i>		<i>Prof. J. T. Willard</i>

☆ ☆ ☆

Published by
PRINTING DEPARTMENT
J. D. Rickman, Supt.

Historical Society

ENTERED AT POST-OFFICE AT MANHATTAN, KAN., AS SECOND-CLASS MATTER
ACT OF JULY 16, 1894.

BOARD OF INSTRUCTION.

- ERNEST R. NICHOLS**, A. M. (University of Iowa), President, Corner Poyntz and Juliette aves
- JOHN D. WALTERS**, M. S. (Kansas State Agricultural College) North end of Sixth street
Professor of Industrial Art and Designing.
- ALEXANDER B. BROWN**, (Boston Music School), A. M. (Olivet). 817 Houston street
Professor of Music.
- JULIUS T. WILLARD**, M. S. (Kansas State Agricultural College) 1211 Moro street
Professor of Applied Chemistry.
- ALBERT S. HITCHCOCK**, M. S. (Iowa Agricultural College) .. College Hill, 2 miles N. W. of College
Professor of Botany.
- FREDRIC A. METCALF**, O. M. Superioris Honoris (Emerson Coll. Oratory) 6th and Poyntz ave.
Professor of Oratory.
- GEORGE F. WEIDA**, Ph. D. (Johns Hopkins) 517 Fremont street
Professor of Pure Chemistry.
- HENRY M. COTTRELL**, M. S. (Kansas State Agricultural College) College Campus
Professor of Agriculture, Superintendent of Farm.
- MISS MINNIE A. V. NELLIE STONER**, (Boston N. S. of H. A.), B. S. (S. D. A. C.) Fourth and Osage
Professor of Domestic Science, Dean of Women's Department.
- JOSEPH D. HARPER**, M. S. (Rose Polytechnic Institute) Houston st., between 6th. and 7th. streets
Professor of Mechanical Engineering, Superintendent of Shops.
- EDWIN A. POPENOE**, A. M. (Washburn) Seventh and Osage streets
Professor of Horticulture and Entomology, Superintendent of Orchards and Gardens.
- FRANK C. LOCKWOOD**, Ph D (Northwestern) Corner Fifth and Humboldt
Professor of English.
- BENJ. L. REMICK**, Ph. M. (Cornell College) Fourth and Osage
Professor of Mathematics.
- BENJ. F. EYER** 512 Houston street
Professor of Physics and Electrical Engineering.
- C. E. GOODRILL**, A. M. (Franklin)
Professor of History and Economics.
- MISS HARRIET HOWELL**, (Pratt Institute) Corner Poyntz and Juliette avenues
Superintendent of Domestic Art.
- JOSHUA D. RICKMAN**, I. T. U. 911 Osage street
Superintendent of Printing.
- MISS JOSEPHINE T. BERRY**, A. B. (Kansas University) Sixth street and Poyntz avenue
Librarian.
- B. S. MCFARLAND**, A. M. (Miami) Fourth and Osage
Principal Preparatory Department.
- MISS FLORENCE BALL** N. E. Cor. Juliette and Fremont streets
Director of Physical Training.
- MISS LORENA E. CLEMONS**, B. S. (K. S. A. C.), Secretary Corner Fourth and Laramie
- SEPTIMUS SISSON**, S. B. (Chicago), V. S. (Toronto) Cor. Manhattan avenue and Moro
Associate Professor of Veterinary Science and Biology.
- D. H. OTIS**, M. S. (Kansas State Agricultural College) College Hill
Assistant Professor of Dairying.
- WILLIAM ARCH MCKEEVER**, A. M. (Kansas University) 621 Houston street
Assistant Professor of English and Philosophy.
- MISS JOSEPHINE C. HARPER**, Instructor in Mathematics Corner Sixth and Pierre streets
- MISS ALICE RUPP**, (Indiana State Normal), Instructor in English
- CHARLES EASTMAN**, Cadet Major and Acting Commandant 611 Poyntz avenue
- William L. House**, Foreman of Carpenter Shop Corner Sixth and Colorado
- Chas. W. Pape**, M. S. (K. S. A. C.), Ass't in Zoölogy and Ass't Curator Museum. 918 Osage st
- R. W. Clothier**, M. S. (K. S. A. C.), Assistant in Chemistry. Fremont, between Fifth and Sixth
- Margaret J. Minis**, Assistant Librarian. Fourth and Moro streets
- R. H. Brown**, M. T. (Kan. Con. of Music), B. S. (K. S. A. C.), Ass't in Music. 817 Houston street
- J. M. Westgate**, M. S. (K. S. A. C.), Assistant in Botany, Cor. Manhattan avenue and Vattier
- May Secrest**, B. S. (K. S. A. C.), Assistant in Domestic Art, Cor. Leavenworth and Seventh
- Wm. Anderson**, B. S. (K. S. A. C.), Assistant in Mathematics. Cor. Humboldt and Juliette ave
- Gertrude Barnes**, Assistant Librarian. Cor. 9th and Moro
- Albert Dickens**, B. S. (K. S. A. C.), Assistant in Horticulture, Fremont and Manhattan avenue
- William Baxter**, Foreman of Greenhouses
- J. G. Haney**, B. S. (K. S. A. C.), Ass't in Feeding and Field Experiments, Manhattan ave and Kearney
- Mary Pritner**, B. S. (K. S. A. C.), Assistant in Domestic Science Cor. 7th and Leavenworth
- Theodore Lindquist**, M. S. (Northwestern), Ass't Physics. Cor. Fifth and Humboldt
- W. M. Sawdon**, B. S. (Purdue), Assistant in Mechanics. Juliette and Houston
- O. I. Purdy**, B. S. (K. S. A. C.), Assistant in Printing. 1216 Fremont street
- Ada Rice**, B. S. (K. S. A. C.), Assistant in Preparatory Department. Osage and 8th. street
- Louis Wabnitz**, Foreman Iron Shops. 5th and Osage
- Henry Van Leeuwen**, (Univ. Wis. D. S.) Inst'r in Cheese Making Manhattan and Kearney
- E. W. Curtis**, (Univ. Wis. D. S.) Instructor in Butter Making
- Florence L. Grant** (Mass. Normal Art School), Assistant in Drawing. Fourth and Osage
- A. T. Kinsley**, B. S. (K. S. A. C.), Assistant Veterinary Department, Tenth and Kearney sts
- Elizabeth Agnew**, B. S. (K. S. A. C.), Assistant in Domestic Science, Ninth and Moro streets
- Jacob Lund**, M. S. (K. S. A. C.), Engineer. Cor. Tenth and Kearney
- C. Jesnette Perry**, B. S. (K. S. A. C.), Executive Clerk. Corner Colorado and Fifth
- W. R. Lewis**, Janitor. N. E. corner Main College Building
- Archie Huycke**, Secretary to President. Manhattan avenue and Kearney

THE INDUSTRIALIST.

VOL. 27.

MANHATTAN, KAN., DECEMBER 4, 1900.

No. 10

DOMESTIC SCIENCE IN ILLINOIS.

THREE years ago the legislature of Illinois made an appropriation of \$8000 with which to erect a building for the use of women, and to be used for the promulgation of the knowledge and practice of domestic science throughout the state. This building is located on the state fair grounds, in Springfield, the capital of the state, and a domestic science school, under the control of the state board of agriculture, is conducted during the week of the state fair and the week following.

The building is colonial in style, three stories high, with piazzas in front and rear. The first floor is devoted to a large reception hall, a lunch room, where a simple luncheon of excellent quality is served, or the visitors may bring their own luncheon and sit down and enjoy them, with coffee or chocolate from the lunch-counter. In one corner of the building is a creche, with all arrangements for the care of very small children, and mothers who wish to visit the exhibits may leave their infants in charge of competent nurse-maids. Immediately back of the creche is the toilet room, which is supplied with chairs, a couch, washstands, towels, and every provision for the comfort of visitors. In fact, the whole first floor is a "rest room" such as many large towns now provide for the convenience of visitors.

With the exception of one room, which is used by the W. C. T. U., the entire second floor is devoted to the domestic science school. There is a large kitchen, with all the appliances of a well-furnished home kitchen, but with nothing that is not possible in a very modest establishment, a dining-room, an assembly room with seats for about 300 persons, an office and a store-room. The third floor is used as a dormitory by the faculty and students.

This year there were in attendance at the school thirty-eight pupils from thirty-five counties in the state. These pupils were appointed by the domestic science clubs that are now auxiliary to many of the farmers' institutes. They must be women between

the ages of seventeen and thirty years, of good moral character, and have had a common-school education. Every pupil is required to be on hand the day the school opens and is required to stay until it closes.

The board of agriculture provides free admission to the fair grounds, cots, mattresses, and dressing tables. Each girl brings her own bedding and pillow, and pays \$5 to the managers to cover the cost of her board for two weeks.

"No less a person than Mrs. Sarah Tyson Rorer is employed by the board of agriculture to conduct this school, and it will be readily admitted that she is far and away the head of her profession in this country. Miss Russell, of Evanston, Miss Taylor, of Princeton, and Miss Wilkin, of Chicago, were Mrs. Rorer's assistants. All were pupils last year in the school and were promoted this year to be heads of departments, and each is invaluable in her department.

"The routine of the school is very interesting. The pupils were divided into five divisions of seven and the work into five classes. One division cooked, one washed dishes, one waited upon the tables, one waited upon the second table and cleared tables and took care of the dining-room, and one did the dormitory work one day and in rotation. Mrs. Rorer was in full charge of the cooking division and many times had girls from the other divisions assisting her. Miss Russell was in charge of the dining-room and the girls of the serving division were taught how to set tables neatly and to wait upon them correctly.

"The breakfasts and dinners were served with as much elegance and care as to detail as a state banquet at the governor's mansion could have been. To many of the girls present it was a most unusual performance, but one to which they took most kindly. I do not believe that in the entire number there was an unwilling pupil. Some were timid, a few were stupid, and an occasional one was lazy, but worked there more willingly than elsewhere. Miss Russell was so charming and tactful and capable that she won every heart.

"After an early breakfast the morning work was quickly and carefully done, the baking and cooking commenced for the day, and at 10 o'clock Mrs. Rorer began the morning lecture and demonstration. This lasted until nearly noon. Luncheon was usually an informal affair served in buffet fashion and hastily

cleared away to make time for an hour of study or rest before the afternoon lecture at 3. At 4:30 it closed and several divisions were kept busy preparing the dinner, which we had at 6:30.

"This was usually a very abundant four-course dinner and to a certain extent illustrated some points made by Mrs. Rorer during her lecture. We had perhaps a clear light soup preceding a heavy meat and vegetable course, a salad of vegetables suitable to the other elements of the dinner followed, and the dinner ended with a dessert of gelatines, or starches or fruits that harmonized with the foregoing courses and made up a well-balanced meal.

"The talk at the tables was not directly of the work, or rather not of the food and its preparation. There were two tables, each seating sixteen, and at one of these Mrs. Rorer presided and she usually led the conversation at her table and occasionally at both. Like a genial hostess and with great tact and discernment, she made the talk general, drawing out the most timid to express an opinion or ask a question. She has traveled extensively and has been a student of many subjects and has met in the course of her life many eminent and interesting persons of whom she told interesting anecdotes. She talked of books and literature, of the work in hospitals, her own work in the slums and her experiences in the George Junior Republic in western New York, of fungi and lichen, and ferns and trees, of the habits and superstitions of the people of other nations and times.

"I have been asked: Did Mrs. Rorer teach hygiene or did she teach cooking? Ignorance as to what cooking-school methods really are prevails to a great extent, and many believe that they are not adapted to ordinary home use. In the two-weeks course given at this free scientific school a bright ambitious girl might learn to prepare, cook and serve every article of food used in a family of modest means in a year. The lessons include a great variety of breads and cereals, soup stocks, fish, meats of every kind except pork, summer and winter vegetables, salads and salad dressings, dozens of simple and inexpensive desserts, milk and eggs, beverages, ices, ice-cream, and some very plain cakes. Pork, salt-rising bread, slack-baked yeast bread, pickles, pie and rich layer cakes she denounced in unmeasured terms. Hot bread she damned with faint praise, white flour yeast bread she declares is lacking in nutritive qualities; whole-wheat bread she declares an almost perfect food; she taught

and the pupils daily made a most delicious steamed brown bread.

"She demonstrated a 'mush bread' that alone is worth the full price of admission. And here is the recipe: Put one pint of milk in a double boiler. When scalded stir in slowly a half-pint of corn-meal. Cook until you have a smooth mush (about five minutes); take from the fire; add the yolk of four eggs, slightly beaten; then fold in carefully the well-beaten whites. Turn this into a baking dish and bake in a moderately quick oven twenty to twenty-five minutes. Serve at once. This might be served in the dish in which it is baked and be helped with a spoon. Corn bread in any form has great food value.

"Some readers of this report may remember what Mrs. Emma P. Ewing said on the subject of salt-rising bread during her course of lectures here, several years ago. Her remarks compared with Mrs. Rorer's on the same subject as a bunch of fire-crackers compares with a modern rapid-fire gun. I shall have to forget them before I try to eat salt-rising bread again.

"During the week of the fair, when the assembly-room was crowded during every lecture, Mrs. Rorer talked about and demonstrated the canning of fruits and vegetables. The students had a lecture on the care of typhoid-fever patients and another on the feeding of infants. There was a delightful lesson on mush-rooms with a number of varieties brought in from the grounds with which to illustrate. There was a lesson on baking-powders, their manufacture and uses, tapiocas, gelatines, and their food values. There was a demonstration on dressing, trussing and cutting up a chicken that was a lesson in cleanliness and celerity; another on the boning of a chicken or turkey that was a lesson in dexterity, and both were lessons in carving.

"An energetic girl with a receptive mind and retentive memory could have received right there a liberal education if she choose to cultivate the germs of useful knowledge implanted by this remarkable teacher. She had method, hygiene, physiology, chemistry, botany and common sense all trained on the work she is probably destined to be the most interested in during the rest of her life. If she was observant she must have acquired at least a pretty taste in English language. No one could listen for several hours each day to Mrs. Rorer's rapid and fluent speech, entirely free from provincialisms, without absorbing some benefit from it.

"On the last day of the session an examination was held, ten

sample questions being given to which each student was to give a written answer. To those whose answers were satisfactory a diploma was to be given. Each student sent there by a domestic science club or farmers' institute is expected to make a report to that club or institute during a winter meeting, and those reports are to be published and a prize is offered for the best report.

"The girls gaining diplomas are expected to assist or lead in forming township domestic science clubs through their own counties. If in this way they did not succeed in doing one thing but raising the standard of bread baking on farms, the movement would be a success. And no one can doubt that the influence of these young women in their respective homes will do much toward domestic reform."

The above article is an extract from a letter written by Mrs. F. J. Sedgwick, of Decatur, and published in an Illinois paper. It seems to me very suggestive of what might be done in a small way in connection with our farmers' institutes.

Kansas has provided even more generously than Illinois for such of her young women as are able to enter the College and take either the regular Collège course or the Domestic Science Short Course; but there are many women who long for and need just such instruction, yet cannot leave home for many days at a time. Why would it not be possible for several counties to unite, rent a room in one of the towns, fit it up for a kitchen, secure a good teacher, and devote a week, or perhaps two weeks once a year to learning better and easier methods of housekeeping.

HARRIET HOWELL.

THE NEW STUDENTS.

A COUNT of the *new* students made November 16 shows that three hundred eighty-one have entered the regular four-year courses this fall. Of these, two hundred eighty-six are young men and ninety-five are young ladies—a larger proportion of young men than usual, a fact that is noticeable in the whole student body.

One hundred twenty-three were admitted on diplomas certifying the completion of approved county courses of study, thirty-four on grammar-grade certificates of accredited schools, forty-six on high-school certificates, ten on teachers' certificates,

twenty-one on grades from other schools, and one hundred forty-seven on examination. One hundred eighty-four came direct from district schools, one hundred forty-two from graded schools, forty-nine from other colleges, and six did their last school work in a county teachers' institute. While here, two hundred forty are supported by parents or friends, fifty-seven partially support themselves, and eighty-four are entirely dependent upon their own resources.

Seventy-two counties of Kansas, seven other states and one territory are represented by these new students, as follows: Allen three, Anderson three, Barber one, Barton six, Bourbon four, Brown nine, Butler two, Chase two, Chautauqua two, Cherokee one, Clay five, Cloud four, Coffey five, Cowley four, Crawford three, Dickinson nine, Douglas four, Edwards one, Elk one, Ellis one, Finney one, Ford one, Franklin four, Geary six, Graham three, Greenwood four, Harper one, Harvey ten, Jackson fourteen, Jefferson eighteen, Jewell nine, Johnson five, Labette two, Lincoln five, Logan one, Lyon one, McPherson twenty-seven, Marion two, Marshall twelve, Mitchell six, Montgomery one, Morris five, Morton one, Nemaha ten, Neosho two, Norton one, Osage five, Osborne three, Ottawa four, Pawnee one, Phillips three, Pottawatomie thirteen, Pratt one, Reno four, Republic seven, Rice three, Riley forty-four, Rush two, Russell three, Saline two, Sedgwick five, Seward two, Shawnee four, Smith ten, Stafford two, Sumner one, Thomas three, Wabaunsee seven, Washington four, Wilson three, Woodson two, Wyandotte one. States: California two, Colorado one, Illinois three, Iowa one, Missouri five, Texas four, Virginia one, and Oklahoma Territory three. LORENA E. CLEMONS.

WEATHER REPORT FOR THE MONTH OF NOVEMBER, 1900.

Temperature.—The mean temperature was 40.97° , which is 1.1° above normal. There have been 13 warmer and 23 colder Novembers in the past forty-two years. The highest temperature was 74° on the 3d; the lowest, 5° on the 21st—a monthly range of 69° . The greatest daily range was 37° on the 8th, the least 4° on the 19th and 23d. The mean daily range was 22.73° . The warmest day was the 3d, the mean being 60° ; the coolest the 21st, the mean being 22° . The mean at 7 A. M. was 32.67° ; at 7 P. M., 39.8° . The mean of the daily maxima was 52.33° ; of the daily minima, 29.6° .

Cloudiness.—The per cent of cloudiness was 41, which is 1 above normal. The per cent at 7 A. M. was 48.3; at 7 P. M., 33.3. Eight days were cloudy, 9 partly cloudy, and 13 were clear.

Rainfall.—The total rainfall was 1.01 inches, which is 0.24 inch below normal. There have been 22 Novembers with more rainfall and 19 with less. Rain fell in measurable quantities on 6 days.

Barometer.—The mean pressure for the month was 29.02 inches, which is 0.17 inch above the normal. The maximum was 29.35 inches at 7 A. M. on the 11th, the minimum 28.52 inches at 7 A. M. on the 22d—a monthly range of 0.82 inch.

Wind.—The wind was from these directions the following number of times: North 17, northeast 15, east 2, southeast 3, south 5, southwest 15, west 1, and northwest 2. The total run of wind was 6388 miles, which is 882 miles below normal. This gives a mean daily velocity of 212.96 miles and a mean hourly velocity of 8.87 miles. The maximum daily velocity was 413 miles on the 17th; the minimum, 63 miles on the 19th. The maximum hourly velocity was 30 miles from 12 to 1 P. M. on the 17th.

The following table gives comparisons with preceding 42 Novembers:

Nov.	Number of Rains.....	Rain in Inches.....	Per cent of Cloudiness...	Prevailing Wind.....	Mean Temperature.	Maximum Temperature	Minimum Temperature	Mean Barometer.	Maximum Barometer...	Minimum Barometer...
1858.....	9	.69			33.81	58	11			
1859.....	2	1.20	69	S	45.43	84	10			
1860.....	4	1.58	37	NW	36.93	68	10			
1861.....	2	.70	36	NW	42.26	74	16			
1862.....	3	1.70	37	N	43.42	72	23			
1863.....	4	2.23	34	SW	38.61	68	1			
1864.....	4	1.61	41	N	36.20	58	10			
1865.....										
1866.....	3	1.37	34	W	45.65	81	20			
1867.....	2	.49	27	SW	44.48	96	7			
1868.....	5	2.17	47	SW	38.08	62	16	28.77	29.20	28.30
1869.....	5	1.19	52	NW	36.87	65	20			
1870.....	2	.13	23	SW	44.80	74	17			
1871.....	5	1.96	54	SW	36.90	72	4			
1872.....	0	.00	40	NW	33.67	70	2			28.17
1873.....	2	.82	40	SW	41.63	79	12	28.71	29.06	28.00
1874.....	5	2.12	58	SW	38.59	78	3	28.77	29.28	28.32
1875.....	3	.34	52	SE	35.97	70	-2	28.81	29.45	28.36
1876.....	2	1.75	52	NW	37.15	70	0	28.85	29.50	28.45
1877.....	6	1.90	53	NW	38.70	65	2	28.80	29.12	28.25
1878.....	2	1.90	35	NE SW	43.44	75	15	28.77	29.12	28.18
1879.....	6	7.83	45	S	42.72	70	15	28.63	29.25	28.25
1880.....	4	1.97	50	SW	31.09	67	7	28.74	29.21	28.17
1881.....	3	1.86	43	SW	39.24	68	7	28.70	29.11	28.34
1882.....	3	.95	42	SW	40.56	79	15	28.79	29.09	28.06
1883.....	1	.30	33	SW	41.45	69	11	28.72	29.23	28.06
1884.....	2	1.07	40	N	42.33	70	12	28.59	28.90	28.15
1885.....	1	.19	21	SW	42.78	84	22	28.63	29.82	28.43
1886.....	2	1.24	32	SW	39.09	79	12	28.52	29.35	28.34
1887.....	2	1.44	32		41.88	85	-9	29.10	29.60	28.67
1888.....	2	.94	32		37.32	78	14	29.05	29.97	28.61
1889.....	4	2.23	42		37.57	66	11	29.03	29.52	28.51
1890.....	2	.91	30	N	44.48	76	16	29.02	29.53	28.49
1891.....	5	.25	33	SW	39.05	86	8	28.93	29.19	28.76
1892.....	1	.65	26	SW	40.93	72	13	28.90	29.32	28.48
1893.....	3	.81	25	SW	39.67	79	9	28.91	29.31	28.38
1894.....	2	.10	31	SW	42.03	79	6	28.93	29.35	28.24
1895.....	4	1.17	51	S	41.81	80	9	28.87	29.22	28.31
1896.....	1	.91	40	N	38.51	74	3	28.90	29.53	28.21
1897.....	3	.54	26	N	41.97	80	4	28.96	29.55	28.47
1898.....	2	1.43	32	S	38.05	78	-4	28.92	29.26	28.29
1899.....	3	.48	40	N	49.12	77	17	28.92	29.39	28.24
1900.....	6	1.01	41	N	40.97	74	5	29.02	29.35	28.52
Sums.....	132	52.43	1608		1674.48			836.26		
Means.....	3	1.25	40	SW	39.87			28.85		

WIND RECORD.

NOVEMBER.	Total Miles.....	Mean Daily.....	Maximum Daily.....	Minimum Daily.....	Mean Hourly...	Maximum Hourly...
1889.....	5485	182.84	344	47	7.62	26
1890.....	5938	197.93	323	51	8.25	31
1891.....	7938	264.60	529	64	11.03	36
1892.....	7956	265.20	570	94	11.05	43
1893.....	6966	232.20	467	48	9.67	38
1894.....	7680	256.00	468	110	10.67	33
1895.....	8711	290.37	562	84	12.10	37
1896.....	8365	278.83	534	79	11.08	38
1897.....	7871	262.37	463	127	10.93	34
1898.....	7847	261.57	598	65	10.90	43
1899.....	6096	203.20	429	42	8.47	30
1900.....	6388	212.96	413	63	8.87	30
Sums.....	87241	2908.07	.....	.....	120.64	.....
Means.....	7270	242.33	.....	.....	10.05	.....

ERNEST R. NICHOLS, *Observer.*

The twenty-ninth annual session of the Kansas State Grange will be held in Manhattan, December 11, 12, and 13, 1900. The headquarters for entertainment will be at the Hotel Higginbotham. The business sessions will be held in the Odd Fellow's Hall. On Tuesday evening, December 11, there will be an open session at the College chapel at which there will be addresses of welcome and response, and an address by Prof. B. S. McFarland, of the College, upon "The Grange—its Objects and Results;" also one by Prof W. R. Goit, of Kansas City, upon "Culverts and Drainage." The address of Professor Goit before the Good Roads Congress at Topeka was one of the most practical addresses of the occasion, and is to be published by the Agricultural Department at Washington as a special bulletin. Music will be furnished under the direction of Professor Brown. Full program will be published next week. All desiring to know more about the Grange as the foremost organization of the farmers of the United States, all interested in the improvement of the roads, and especially all road commissioners and supervisors are cordially invited to be present. The railroads will give a one-and-one-third rate to this meeting. The tickets will be sold on the certificate plan. The passenger pays full fare going, taking a receipt from his local agent. This receipt is presented at Manhattan to the secretary of the State Grange, and after being signed by him entitles the holder to a one-third rate returning.

THE INDUSTRIALIST.

*Published weekly during the College year by the
Printing Department of the*

KANSAS STATE AGRICULTURAL COLLEGE.

Manhattan, Kansas.

☆ ☆ ☆

PRES. E. R. NICHOLS.....Editor-in-Chief

PROF. J. D. WALTERS.....Local Editor

PROF. J. T. WILLARD.....Alumni Editor

BOARD OF REGENTS.

HON. E. T. FAIRCHILD, President.... Ellsworth

HON. J. S. McDOWELL, Vice-President,
Smith Center

HON. W. T. YOE, Treasurer..... Independence

HON. WM. HUNTER, Loan Comm'r, Blue Rapids

HON. MRS. SUSAN J. ST. JOHN..... Olathe

HON. CARL VROOMAN..... Parsons

HON. J. M. SATTERTHWAITE..... Douglass

PRES. E. R. NICHOLS, Sec. *ex-officio*.

LOCAL NOTES.

The College band has thirty members.

Dr. N. S. Mayo writes from Storrs, Conn., that a new boy arrived at their home November 19.

The *Kansas Farmer* reprints Jesse B. Norton's recent article in the INDUSTRIALIST on "Special Education."

President Nichols went to Ellsworth last Monday to confer with Hon. E. T. Fairchild, president of the Board of Regents, about College matters.

A new edition of the constitution and by-laws of the Hamilton Literary Society has just been issued, containing an interesting history of the society.

The military ball Wednesday evening at Union Hall was a very pleasant event. Several members of the Faculty were present and all report a good time.

Miss Florence Ball has been absent from her department on account of a persistent attack of the malarial fever. She is under the care of Doctor Roberts.

President Nichols is at work on the plan of instruction for the winter term. The scheme required for next term is as complex as the time table of the Santa Fe railroad system.

Professors Hitchcock and Otis and Miss May Secrest were in Coffey county last week conducting farmers' institutes at Leroy, Lebo, and Agricola. Mr. Haney conducted an institute at Union Center, ten miles south of Alma.

Farmers' institutes will be held at Burlingame on December 5 and 6, at Peabody on December 7 and 8, and at Glen Elder on December 6 and 7. Professors Willard and Harper will attend at Burlingame, Professor Stoner at Peabody, and Professors Hitchcock and Otis at Glen Elder.

Dr. C. H. St. John, the noted temperance lecturer of Kansas City, conducted chapel exercises on Tuesday morning. He also gave the students a very appropriate talk on intemperance and the use of tobacco. The girls he warned against small shoes, tight lacing, late evenings and early marrying. The Doctor is an interesting public speaker.

Frank Amos has leased the third story of the Snow building, on the main street, for a term of ten years and is remodeling it for a photograph gallery. The north side of the building will present a unique front when glazed and completed.

Professor George F. Weida delivered an address before the Central Kansas Teachers' Association, at Newton, at their Thanksgiving session, and Professor F. C. Lockwood lectured before the North Central Teachers' Association, at Beloit.

On Monday, November 26, the second-term short course girls in domestic science entertained the first-term girls. Lunch was prepared and served. The Printing Department was also complimented and Superintendent Rickman says it was "elegant."

The entertainment in the chapel Monday evening by Lovett's Boston Stars was interesting and delightful in every respect. The next entertainment of the lecture course will be Uncle Josh Picture Play, given by the famous impersonator Harry W. DeLong, supported by three other performers. The troupe will be here on December 13.

Prof. J. T. Willard attended the first annual meeting of the Johns Hopkins Club of the Middle West, at Kansas City, on Thanksgiving night. There were fifteen former students of the university present. The Professor reports an enjoyable and inspiring time. The club is formed by members from Kansas, Missouri, Iowa, Nebraska, and Arkansas.

Monday the Farm Department received a call for a competent man to take charge of a retail bottled-milk dairy at Albuquerque, New Mexico. Wednesday the Farm Department was asked for a superintendent for an eleven-hundred-acre dairy farm near the city of Old Mexico. In both places good wages and good opportunities were offered for pushing, college-trained men.

The football game at St. Marys on Thanksgiving, by the K. S. A. College team and the St. Marys College eleven resulted in a score of 28 : 6 in favor of the latter. According to reports by our students and the spectators from Manhattan, the game was rather "rough and tumble." Messrs. Pangburn and Gillis of the Agricultural College team were considerably bruised and four of the St. Marys team were more or less injured.

The thirteenth annual report of the Experiment Station of the Kansas State Agricultural College for the fiscal year 1899-'00 is being mailed to persons interested in the work of the staff. The report is a handsome, well-illustrated volume of one hundred sixty-four pages. It contains statistical statements by the president, treasurer and secretary of the College, a general report of the council, reprints from bulletins 90 to 98, a list of all the Station publications up to date, and an index. That the influence and value of the Station have increased during the past year may be judged from the rapid growth of the mailing list and the very ap-

preciative letters that are being received from the farmers of the State and elsewhere. Applications for the bulletins come from all parts of the world. Letters of inquiry upon the greatest variety of agricultural topics are received in large numbers, chiefly from our own State, but not infrequently from others, and even from foreign countries. One of the means by which the work of the Station has been brought to the favorable notice of the public has been the farmers' institutes which have been held in large numbers in nearly all parts of the State the past year. An appropriation was made by the legislature to cover the expenses of the institutes, but the chief draft for speakers has been upon the Experiment Station force. The council believe that in the future the demands of this educational field should be met by an appropriation that will provide for an increase in the Station force.

The Military Department has never before done more extensive work in field drill and tactics than this fall term. The cadet battalion, numbering nearly five hundred students, was completely organized for the present fall term's work before October 24. The work was somewhat hampered at the beginning of the term by the disagreeable weather and the largest number of cadets in the history of the department. The following is the roster of the field, staff and line officers: Field and Staff—Major and Commandant, Charles Eastman; Battalion Adjutant (First Lieutenant), B. F. Mudge; Ordnance Officer (First Lieutenant), Floyd Howard; Sergeant-Major, J. F. Ross; Color Sergeant, G. R. Shepherd; Quartermaster-Sergeant, P. H. Ross; Chief Trumpeter, J. A. Correll. Line officers—Company "A," Captain, H. F. Butterfield; First Lieutenant, Bryant Poole; Second Lieutenant, Murray S. Cole. Company "B," Captain, Fred Meyers; First Lieutenant, Rainey Faris; Second Lieutenant, Geo. F. Bean. Company "C," Captain, Chas. A. Scott; First Lieutenant, Chas. O. Sparks; Second Lieutenant, Harry N. Vinall. Company "D," Captain, J. H. Oesterhaus; First Lieutenant, M. D. Snodgrass; Second Lieutenant, Robert C. Cole. There are fifteen commissioned officers, twenty-four sergeants, thirty-six corporals, eight trumpeters, thirty-one band men, and three hundred thirty-four privates; aggregate, four hundred forty-eight. A number have dropped drill for various reasons. Some have gone home while others, on account of physical disabilities, have had to be excused. The senior class furnishes eight commissioned officers, the junior class is represented by six commissioned officers (who entered with the present senior class), and nineteen sergeants. The sophomore class has five sergeants and thirty-six corporals.

ALUMNI AND FORMER STUDENTS.

H. E. Moore, '91, is conducting a successful implement business in Kingfisher, Okla.

Mary L. Waugh, '99, has resigned her position as office assistant in the Farm Department.

C. S. Pope, third-year student 1894, has a very prosperous drug business at Carbondale, Kan.

Claud Masters, '99, is finding good use for his chemistry in carrying on a drug business in Hillsdale, Kan.

A. G. Wilson, '99, has a half interest in the firm of Ball & Wilson, Kansas City, Mo. They are doing a good business in high-class job printing.


Frank Yeoman, '98, is now practicing law in Kansas City and is well satisfied with the degree of success which he is meeting. His office is with Irish, Brock & Smith.

T. W. Morse, '96, has severed his connection with the *Kansas Farmer*, and now has a good position with the *Livestock Indicator*, of Kansas City, as advertising solicitor.

Harriet Vandivert, '97, visited the College and Manhattan friends during the Thanksgiving holidays. She is teaching domestic science in Fairmount College, Wichita.

H. G. Pope, '94, who graduated from the Kansas University law school, is enjoying a good practice in Kansas City as a member of the firm of Bird & Pope. His office is in the Massachusetts Building.

The editor had the pleasure of meeting a number of old students in Kansas City last week. W. E. Smith, '93, was full of information concerning others, and has consented to provide us with a number of items in the near future. Mr. Smith with R. J. Brock, '91, and F. L. Irish, recently of Manhattan, constitute the firm of Irish, Brock & Smith, which opened offices in Kansas City a few months since, where they have met with unexpected success. Mr. Brock still lives in Manhattan, and looks after the interests of the firm at this place. Mr. Smith will give a warm welcome to all of his old friends at 501-502, Massachusetts Building, Kansas City, Mo.



**WEBSTER'S
INTERNATIONAL
DICTIONARY**

WEBSTER'S INTERNATIONAL DICTIONARY

NEW EDITION **JUST ISSUED**

NEW PLATES THROUGHOUT

Now Added **25,000 NEW WORDS**, Phrases, Etc.

Rich Bindings • 2364 Pages • 5000 Illustrations

Prepared under the supervision of W. T. Harris, Ph.D., LL.D., United States Commissioner of Education, assisted by a large corps of competent specialists.

BETTER THAN EVER FOR GENERAL USE

Also Webster's Collegiate Dictionary with Scottish Glossary, etc.

"First class in quality, second class in size."


Specimen books, etc., of both books sent on application

G. & C. MERRIAM CO., Publishers, Springfield, Mass., U. S. A.

**GET
THE
BEST**

A

Ω



THE INDUSTRIALIST.

i

CULTIVATED BLUE-GRASSES.

Press Bulletin No. 73, issued by Botanical Department.)

There are several different species of grasses offered by seedsmen under the general name of blue-grass. The following notes may prevent confusion:

Kentucky Blue-grass. (*Poa pratensis*.) This is the common blue-grass of Kansas. It is widely used as a lawn grass and in the eastern counties not infrequently forms a part of permanent pastures. It is a perennial, spreading by underground stems and forming a compact sod. The flowering stems are a foot or two high, or even taller in moist situations, and bear at the top a spreading pyramidal flower cluster. For lawns it is recommended to sow three bushels of seed per acre and roll in, rather than cover the seed. This grass is called June grass in the Northern states, green grass in Pennsylvania, and smooth-stalked meadow grass in England. It is a native of the northern regions in both hemispheres, but is not a native of Kansas.

Canadian Blue-grass. (*Poa compressa*.) This resembles the preceding but is much less valuable. It differs in having a blue-green color, strongly flattened or two-edged stems, and a small, narrow flower cluster. Under similar conditions the growth is not so tall. Like common blue-grass, it spreads by creeping stems and forms a strong sod. It will grow on thinner, poorer soil than the preceding. It is what goes under the name of "Blue-grass" in the New England and Middle states. Although of considerable value in the East, especially on poor soil, it seems not worthy of recommendation for Kansas. It is offered for sale in some catalogues under the name of English blue-grass, but is not to be confused with the grass known in Kansas by that name.

Texas Blue-grass. (*Poa arachnifera*.) A perennial, spreading by creeping underground stems forming a strong growth one to three feet high. It is a native of Texas but is cultivated through the South quite extensively. It is highly recommended for permanent pasture, especially during the winter months. It may do well in some parts of southern Kansas, but has not been sufficiently tested. The flower cluster at the top of the stem is dense and narrow, not spreading like Kentucky blue-grass.

Meadow Fescue. (*Festuca pratensis* or *Festuca elatior*.) This grass is not a blue-grass but is mentioned here because it is commonly known in Kansas by the name of English blue-grass. Most seed catalogues sell it under the name of meadow fescue, and this is the name which properly applies. It is a native of Europe and now extensively grown in the United States for meadow and for pasture. It is a valuable grass for eastern Kansas for both hay and pasture. It is recommended to sow it with orchard grass—meadow fescue fifteen pounds, orchard grass twenty pounds per acre. When conditions are favorable, add two or three pounds of red clover. The field of orchard grass and meadow fescue on the College farm has given very satisfactory results. Meadow fescue is also known under the name of Randall grass and Evergreen grass.

A. S. HITCHCOCK.

**KANSAS STATE....
AGRICULTURAL COLLEGE.**

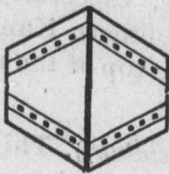
FARMERS' SHORT COURSE.

January 3 to March 22, 1900.

Men from 18 to 75 years of age who need such help are invited to take this work if they are unable to take our four-year course.



Students Push It



The aim of this course is to give instruction which will enable the student to grow larger and better crops, increase the fertility of the soil while

TAKING PAYING CROPS

from it, secure cheaper and greater gains in feeding, maintain the health of the animals on the farm, improve the quality of all the products on the farm and market them to best advantage.

**For full particulars write to
PRES. E. R. NICHOLS,
Manhattan, Kan.**

Volume 27.

Number 11.

THE INDUSTRIALIST

ISSUED WEEKLY BY

**KANSAS STATE
AGRICULTURAL COLLEGE**



Editor-in-Chief,

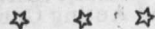
Pres. E. R. Nichols

Local Editor,

Prof. J. D. Walters

Alumni and Former Students,

Prof. J. T. Willard



Published by
PRINTING DEPARTMENT
J. D. Rickman, Supt.

Entered at post-office, Man-
hattan, Kan., as second-class
matter. Act of July 16, 1894.

Historical Society

BOARD OF INSTRUCTION.

ERNEST R. NICHOLS, A. M. (University of Iowa), President.....	681 Poyntz avenue
JOHN D. WALTERS, M. S. (Kansas State Agricultural College).....	North end of Sixth street
ALEXANDER B. BROWN, (Boston Music School), A. M. (Olivet).....	817 Houston street
JULIUS T. WILLARD, M. S. (Kansas State Agricultural College).....	1211 Moro street
ALBERT S. HITCHCOCK, M. S. (Iowa Agricultural College).....	College Hill, 2 miles N. W. of College
FREDRIC A. METCALF, O. M. Superiors Honoris (Emerson Coll. Oratory) 6th and Poyntz ave.	Professor of Oratory.
GEORGE F. WRIDA, Ph. D. (Johns Hopkins).....	517 Fremont street
HENRY M. COTTRELL, M. S. (Kansas State Agricultural College).....	College Campus
MISS MINNIE A. V. NELLIE STONER, (Boston N. S. of H. A.), B. S. (S. D. A. C.) Fourth and Osage	Professor of Agriculture, Superintendent of Farm.
JOSEPH D. HARPER, M. S. (Rose Polytechnic Institute) Houston st., between 6th. and 7th. streets	Professor of Domestic Science, Dean of Women's Department.
EDWIN A. POPENDER, A. M. (Washburn).....	Seventh and Osage streets
FRANK C. LOCKWOOD, Ph D (Northwestern).....	Corner Fifth and Humboldt
BENJ. L. REMICK, Ph. M. (Cornell College).....	Fourth and Osage
BENJ. F. EYER.....	512 Houston street
C. E. GOODELL, A. M. (Franklin).....	626 Houston street
MISS HARRIET HOWELL, (Pratt Institute).....	Corner Poyntz and Juliette avenues
JOSHUA D. RICKMAN, J. T. U.....	911 Osage street
MISS JOSEPHINE T. BERRY, A. B. (Kansas University).....	Sixth street and Poyntz avenue
B. S. MCFARLAND, A. M. (Miami).....	Fourth and Osage
MISS FLORENCE BALL.....	N. E. Cor. Juliette and Fremont streets
MISS LORENA E. CLEMONS, B. S. (K. S. A. C.), Secretary.....	Corner Fourth and Laramie
SEPTIMUS Sisson, S. B. (Chicago), V. S. (Toronto).....	Cor. Manhattan avenue and Moro
D. H. OTIS, M. S. (Kansas State Agricultural College).....	College Hill
WILLIAM ARCH MCKEEVER, A. M. (Kansas University).....	621 Houston street
MISS JOSEPHINE C. HARPER, Instructor in Mathematics.....	Corner Sixth and Pierre streets
MISS ALICE RUPP, (Indiana State Normal), Instructor in English.....	620 Houston street
CHARLES EASTMAN, Cadet Major and Acting Commandant.....	611 Poyntz avenue
William L. House, Foreman of Carpenter Shop.....	Corner Sixth and Colorado
Chas. W. Pape, M. S. (K. S. A. C.), Ass't in Zoölogy and Ass't Curator Museum.....	918 Osage st
R. W. Clothier, M. S. (K. S. A. C.), Assistant in Chemistry.....	Fremont, between Fifth and Sixth
Margaret J. Minis, Assistant Librarian.....	Fourth and Moro streets
R. H. Brown, M. T. (Kan. Con. of Music), B. S. (K. S. A. C.), Ass't in Music.....	817 Houston street
J. M. Westgate, M. S. (K. S. A. C.), Assistant in Botany, Cor. Manhattan avenue and Vattier	
May Secrest, B. S. (K. S. A. C.), Assistant in Domestic Art, Cor. Leavenworth and Seventh	
Wm. Anderson, B. S. (K. S. A. C.), Assistant in Mathematics, Cor. Humboldt and Juliette ave	
Gertrude Barnes, Assistant Librarian.....	Cor. 9th and Moro
Albert Dickens, B. S. (K. S. A. C.), Assistant in Horticulture, Fremont and Manhattan avenue	
William Baxter, Foreman of Greenhouses.....	
J. G. Haney, B. S. (K. S. A. C.), Ass't in Feeding and Field Experiments, Manhattan ave and Kearney	
Mary Pritner, B. S. (K. S. A. C.), Assistant in Domestic Science.....	Cor. 7th and Leavenworth
Theodore Lindquist, M. S. (Northwestern), Ass't Physies.....	Cor. Fifth and Humboldt
W. M. Sawdon, B. S. (Purdue), Assistant in Mechanics.....	Juliette and Houston
O. I. Purdy, B. S. (K. S. A. C.), Assistant in Printing.....	1216 Fremont street
Ada Rice, B. S. (K. S. A. C.), Assistant in Preparatory Department.....	Osage and 8th. street
Louis Wabnitz, Foreman Iron Shops.....	5th and Osage
Henry Van Leeuwen, (Univ. Wis. D. S.) Inst'r in Cheese Making.....	Manhattan and Kearney
E. W. Curtis, (Univ. Wis. D. S.) Instructor in Butter Making.....	
Florence L. Grant (Mass. Normal Art School), Assistant in Drawing.....	Fourth and Osage
A. T. Kinsley, B. S. (K. S. A. C.), Assistant Veterinary Department, Tenth and Kearney ave	
Elizabeth Agnew, B. S. (K. S. A. C.), Assistant in Domestic Science, Ninth and Moro streets	
Jacob Lund, M. S. (K. S. A. C.), Engineer.....	Cor. Tenth and Kearney
C. Jeanette Perry, B. S. (K. S. A. C.), Executive Clerk.....	Corner Colorado and Fifth
Alice Melton, B. S. (K. S. A. C.), Clerk in Director's office.....	
W. R. Lewis, Janitor.....	N. E. corner Main College Building
Archie Huycke, Secretary to President.....	Manhattan avenue and Kearney

THE INDUSTRIALIST.

VOL. 27. MANHATTAN, KAN., DECEMBER 11, 1900. No. 11

WHAT BOOKS SHOULD THE KANSAS FARMER READ?

IN THE library of the Kansas State Agricultural College are 2,960 books on agriculture. Of all this number, if the young Kansas farmer should be limited to three the writer would recommend "The Fertility of the Land," by Professor Roberts, "Our Farming," by T. B. Terry, and "Feeds and Feeding," by Professor Henry.

Professor Roberts is a successful farmer, owner of a farm of several hundred acres. He stands at the front as a teacher of agriculture and as an experiment station director, has traveled widely and is in touch with successful farmers in all parts of the United States. With all these qualities, Professor Roberts is warm-hearted and in close sympathy with the young farmer—his ambitions, his difficulties and his opportunities. While written from a thoroughly scientific standpoint, "The Fertility of the Land" can be readily understood by the young man whose education has been received only at the country school. The book treats of things that are the foundation of profitable farming in Kansas, and it should be read by every Kansas farmer and farmer's boy.

T. B. Terry was the son of a clergyman; his boyhood was spent in town and he went into business in town. In a trade he got a farm. He knew nothing about land, and found afterwards that one man had refused this farm as a gift and that no responsible renter would take it. He finally had to move onto this barren piece of land and started farming with no knowledge of the work and \$3700 in debt. With such a start and with no other source of income, Mr. Terry brought this run-down farm up until he sold \$2500 worth of crops from one year's work, and has it thoroughly improved with good buildings. The book, "Our Farming," gives in detail how he did it. Many of Mr. Terry's methods are adapted to Kansas farming and many are not. The reader can use the methods suited to his conditions, and the whole book will

stimulate the young farmer to better methods and will encourage him in his ambitions.

"Feeds and Feeding" is the only book in the English language that gives the results, complete to date, of the thousands of trials of feeds and of methods of feeding made by American and European experiment stations and successful feeders. This book contains six hundred forty pages of thoroughly condensed matter, giving results of all important investigations on feeding horses, beef and dairy cattle, hogs and sheep. It gives full information in regard to the characteristics and values of all feeding stuffs used in this country, shows the effect on feed value of the different methods of harvesting farm crops, and treats fully of the preparation of feeds and of methods of feeding. It also explains in plain language the science of animal nutrition. The man who feeds only one animal and the man who feeds thousands of head will alike find this book a practical help whenever the value of a feed or a method of feeding needs to be considered.

To the farmer who wants a more extended list of books, the following are among the best on subjects under the heads given:

SOILS AND CROPS:

- The Fertility of the Land. Roberts.
- The Soil. King.
- Our Farming. Terry.
- Forage Crops. Shaw.
- Alfalfa. Coburn.
- Clover Culture. Wallace.
- Indian Corn Culture. Plumb.
- A Book on Silage. Woll.
- First Principles of Agriculture. Voorhees.
- Fertilizers. Voorhees.
- Agriculture in Some of Its Relations to Chemistry. Storer.

FEEDS AND FEEDING:

- Feeds and Feeding. Henry.

BREEDS AND BREEDING:

- Stock Breeding. Miles.
- Horse Breeding. Sanders.
- Cattle Breeding. Warfield.
- The Study of Breeds. Shaw.
- The Breeds of Live Stock. Sanders.
- Swine Husbandry. Coburn.
- The Domestic Sheep. Stewart.
- Short-horn Cattle. Sanders.
- Hereford Cattle. MacDonald and Sinclair.
- On Polled Cattle. MacDonald and Sinclair.

DAIRYING:

- American Dairying. Gurler.
Milk and Its Products. Wing.
Dairy Bacteriology. Russell.
Principles of Modern Dairy Practice. Grotenfelt and Woll.
Chemistry of Dairying. Snyder.
Milk Testing. Farrington and Woll.
A. B. C. of Butter Making. Monrad.
A. B. C. of Cheese Making. Monrad.

BUILDING:

- Barn Building. Sanders.
The Farmstead. Roberts.

Any of these books may be obtained at the publisher's price through your farm paper and through most local booksellers.

The U. S. Department of Agriculture issues what are called "Farmers' Bulletins." These bulletins are sent free to any address upon application to the Secretary of Agriculture, Washington, D. C. One hundred twenty-one have been issued and new ones come out frequently. Farmers can receive them regularly and also get most of the back numbers by applying to the department at Washington. Every Kansas farmer should have them.

The best books on agriculture will not take the place of good farm papers. Improvements are being discovered constantly in every branch of agriculture, and what may be the best known method to-day may in a few months need considerable modification. Study books to understand the principles underlying farm practice and read farm papers to keep in touch with best methods.

H. M. COTTRELL.

The regular College Department of Domestic Science has this term carried on two distinct courses of practical work, *i. e.*, Therapeutic and Domestic Science No. 1. The therapeutics have had a complete and practical course of training in the care of the sick and diet in disease. They have prepared in class the various kinds of starchy gruels, beef broths and teas, acid and bland drinks, albumenized drinks, vegetable soups and nutritious custards and puddings, full directions being given in each case as to when, how and in what amount each is to be given. They have also prepared a variety of dishes for convalescent patients. Since the recovery of a patient depends so much upon the proper kind and combination of food which he takes, too much can not be said in praise of such a course of instruction as this.

AGRICULTURAL OPPORTUNITIES FOR THE YOUNG MAN WITH GRIT.

A PROMINENT stockman in eastern Kansas made the remark about a year ago, that if the community needed another doctor, they would send to a medical college; if the community or any individual needed a bookkeeper or stenographer, they would send to a business college, and when a farmer, horticulturist or stockman needs a man to look after his affairs why not, says he, send to the Agricultural College?

Judging from the letters received by the Farm Department, to say nothing of those received by other departments, it looks as though the College was doing a good deal of this kind of work. Requests have recently been received for over forty young men to take up positions in some phase of agricultural work. These requests may be grouped under the following headings:

Schools and Colleges. A farm school in New England wrote for a young man to take charge of their agricultural department. Salary, \$800, with expectation of promotion. A man of wealth who contemplates the establishment of an industrial school in Missouri wrote for a bright young man to teach general agriculture, horticulture, and dairying. Within the last two months one of our graduates has been installed as an instructor in dairying at the Iowa Agricultural College.

Superintendents and Managers of Stock Farms. Aside from some requests which were indefinite as to the number of men wanted, there were six special requests for young men to take charge of stock farms. One man in Lincoln county was ready to pay the right man \$50 a month besides house rent and fuel. Another man in Rice county offered to pay the right kind of a man \$75 a month as foreman. A man who feeds 4,000 head of steers in western Kansas would gladly pay the young man who could properly manage all his stock interests \$100 a month, plus house rent and fuel. Another request for a manager of a stock farm came from the far-off Philippine Islands.

Superintendents and Managers of Dairy Farms. Seven definite requests came for men capable to successfully run and manage dairy farms. On the first of last October one of our enterprising graduates took charge of the dairy work on an 8,000 acre ranch in Nebraska. The proprietor has given him a part interest, and in writing to the College says that he believes that this young man

will not only make a reputation for himself but a fortune. Another letter from the proprietor of a large dairy farm in New Mexico contained the following: "I shall want a strong, energetic young man who has taken a course at your school, who understands the handling of milk, appliances, and feeding a balanced ration, and who has not only a theoretical idea but practical knowledge of doing this work, knows how to apply what he knows and is willing to work." Other similar requests came from Cowley, Johnson, Wyandotte and Sumner counties.

It is interesting to note in connection with the demand for men on stock and dairy farms the following request from the secretary of the California State Agricultural Society: "We will hold our State Fair in California commencing September 3 and concluding September 15. We have considerable live-stock exhibit and would like to secure the services of a competent expert live-stock judge. Is there some one connected with your College who would like to make this trip to California? I would be pleased to have the terms and conditions upon which the proper person could be procured."

Butter Makers and Station Operators. Two letters were received asking about young men to take full charge of creameries. Nine requests came for butter makers with the salary offered as high as \$60 per month. One creamery company made the remark, "It looks like butter makers were scarce articles." Ten young men were wanted to operate skimming stations. Two creamery companies wanted what might be called a route agent and educator—a man to work up milk routes and teach the patrons how to feed the calves on skim-milk and how to select and grade up the herd.

Sundries. In addition to the above there was a request from one of the leading Kansas dailies for a wide-awake young man to travel for the purpose of writing up stock sales. A manufacturer of modified milk wanted two young men at fair salaries with good chances for promotion. There were also requests for helpers in creameries and dairy farms, which, while they did not pay very large salaries, presented excellent opportunities for growth and advancement.

It is worthy of note that in each of the above cases nothing but first-class young men were wanted. One creamery company even went so far as to say, "No cigarette fiend need apply." Men who have large interests at stake are unwilling to trust these

interests to anybody but experts. To be able to hold the positions mentioned above a young man must prove himself competent. It used to be considered that when a young man was not good for anything else his place was on the farm. That time is past. The agricultural interests of to-day are calling for just as talented men as are demanded by the professions of law, medicine, or the ministry. A young man who takes up studies along agricultural lines with a view of working into an easy, lucrative position is going to be greatly disappointed. It requires long and persistent study, coupled with plenty of practice, in order to become proficient along these lines. He must understand something about soil physics, something about the micro-organisms in both soil and plants, and be able to encourage the beneficial or suppress the injurious. He must understand the principles of animal nutrition, must know the composition of our different feeding stuffs, and not only be able to figure out a ration to meet the needs of the animal, but must secure these elements in the cheapest form possible.

Because a young man takes the Agricultural Course is no guarantee that he will be able to secure one of these positions. While many are equal to the minor positions, a very small percentage can at present be recommended for the best positions. The latter can only be filled by those who have the perseverance and grit to completely master their specialty. D. H. OTIS.

WARMING WATER FOR CATTLE.

TANK heaters were used to warm the water for the steers fed on the College farm last winter. The water-supply is from the city water system and was let into the tanks as often as was necessary to keep the cattle supplied. The tanks are ordinary wood tanks, seven feet in diameter, two feet three inches deep, and stand in the open without protection or covers. Eighty head of steers were fed in four lots of twenty each, and two lots were watered at each tank.

The heaters used last winter are made by the U. S. Wind Engine and Power Co. In form they resemble a deep cast-iron kettle provided with a removable grate four inches from the bottom. The lid is provided with openings for admitting fuel, controlling draft and the attachment of pipe to carry smoke away. The draft is the same as the air-tight heater, the opening being the same,

being at the top, and carried below the grate by a sheet-iron pipe at the side of the body of the heater.

We used coal as fuel exclusively, and had no trouble in any way with the operation. The fires seldom went out, and only required a little poking and additional coal at feeding time—twice a day. The ashes need removing occasionally, and we found the easiest way to be to take up the heater, which is held in place by rods which screw into a platform on which the heaters were set, and empty the ashes out. This needs to be done only once a week.

It is my opinion that it took less time to care for the heaters than it would have taken to keep the ice out of the tanks. We put the heaters in the tanks February 10, and used them till April 18, a period of sixty-eight days. In this time we burned 2545 pounds of coal in the two heaters, or about nineteen pounds a day in each heater. At \$4.00 per ton this coal cost \$5.09, or about four cents per heater per day. During this time the tanks were not frozen over. On a few occasions there was a little ice formed on the tanks, but this was due to the water being drunk out so low that the heaters did little good.

We had no positive way of estimating the value of the heaters, but there is certainly no one to dispute that water about the temperature of ordinary well water is not better for cattle than ice water. A steer does not drink often but drinks a large quantity at a time, and a difference of twenty to thirty degrees in the water taken into his stomach must certainly have its effects. Another strong point is, that when the cattle have to drink ice water they usually stand around the tank and sip for a long time—perhaps come out of the shed where it is warm as compared with the location of the tank. They fill up on the ice water, shake their heads and make a run for the shed again, where they will shiver until they get the water warm. The bad effects of cold water can hardly be estimated. The heaters take off the chill so cattle drink readily, and no doubt drink more, which is also desirable. We will have heaters in seven tanks this winter, and have already begun using several of them. The heaters are from several different manufacturers, and careful notes will be kept on each one. The water in the tanks is now controlled by float valves, which keep the tanks full all the time. With a supply tank-float valve and tank heater, the water supply in the stock yards becomes a very small question.

J. G. HANEY.

WHAT THE BOYS SAY ABOUT THE KANSAS DAIRY SCHOOL.

L. S. Edwards, Emporia, Kan.: "The Dairy Course at the Agricultural College is designed to meet the demands of a class of people who wish to gain a large amount of practical knowledge in a short space of time. It meets this demand admirably. Every item in the course is there on account of its practical value. In working on the farm and in the dairy I find that I can continually put to practical use the principles of agriculture and dairying as taught in the dairy school '00. I consider that, next to taking the regular course, the best thing that a young man can do, who expects to follow dairying for a business, is to take the Dairy Short Course. It is cheap, practical and far-reaching in its effects."

J. A. Reh, Princeton, Kan.: "In November, 1899, I was working in a creamery when I told my employer that I wished to attend the Dairy School that winter, he said: 'Very well; I am glad of it, and if you will come and work for me in the spring I will increase your wages \$10 per month.' I want to say to any young man or woman who intends to engage in creamery work, dairy farming or keeping cows in connection with the farm, that they cannot do without a course of this kind for twice the sum of what it costs."

O. R. Mechem: "I took the Dairy Short Course last winter at the Agricultural College and consider it of great value to any young man wanting knowledge in that line. A young man attending this course will learn a great many things besides dairy work that will be useful to him. This being a State institution, it has secured the best teachers to be had for this department. It is twelve weeks well spent for any young man. One improving all the opportunities he has there in attending this course will have no trouble in securing a position when through. The cost is not to be considered when compared with the good that it does. One can go through nicely with \$50 or less if he wishes."

Mr. J. W. Mills, Ozawkie, Kan.: "I cannot find words suited to express the value. It gave me, in the first place, the why to what I already had, adding the idea of balancing the ration for all stock, especially for the cow, calf, and hog. Bacteriology, or the knowledge of it, prompts to doing well and on time the cleansing of utensils and station after each run, thus insuring against salting my cream for bad flavor. Then the work of judging and testing the dairy cow came right into play when the management of a station fell into my hands."

H. M. Bainer, Pleasant Hill, Kan., says: "By taking the Dairy Course I became a successful station operator at once without a

previous knowledge of the work required. Besides learning the care and management of the machinery, I learned the value of different feeds; how to mix them to get the best and cheapest rations, and also how to feed them to the dairy cow to get the largest profit from her. That which was taught as to the care and management of cows and calves alone made the course worth several times its cost to me had I not gone into the creamery business at all."

Fred Schaaf, Irving, Kan.: "As a member of last year's dairy class I want to say to those who may be in doubt as to the real practical value derived from the dairy course that I for one would not take \$1000 for what I learned at the dairy school in three months. As a result of this training I could have had four different positions since spring. Its value to a skimming-station operator cannot be overestimated. I want to thank the professors of this department for their conscientious and painstaking work. Long life and abundant success to the Kansas Dairy School under their management."

A. E. Blair, Blairstown, Mo.: "My course at K. S. A. C. dairy school (January to March, 1900,) was a source of much benefit to me. It aroused in me a deep interest in a most profitable and interesting business. I have been working steadily at a good salary ever since finishing the course, having accepted an offer from several good ones. These offers came as a result of my having attended the dairy school. The instruction received in the feeding and care of dairy stock and in the handling, care and testing of milk has been of special value to me. I do not in the least regret the time spent in this school, for I consider this the best and most paying investment I could have made, and which I expect to bring me compound interest for years to come."

C. Bainer, Pleasant Hill, Kan.: "I was a student at the dairy school at Manhattan, Kan., last winter. When I went there I was like a great many others who did not expect to get very much good out of the school in so short a time, but I was greatly surprised with the instructions I got and the way they were put forth to help young men to see the need of an education in this line. I learned many things along the dairy line which I had never thought of and which I never would have learned had I not taken a course in the dairy school. I would say to any young man who expects to engage in the dairy business at all to take a course in the dairy school at Manhattan, Kan. He will be paid many times its cost."

THE INDUSTRIALIST.

*Published weekly during the College year by the
Printing Department of the*

KANSAS STATE AGRICULTURAL COLLEGE. Manhattan, Kansas.

★ ★ ★

PRES. E. R. NICHOLS.....Editor-in-Chief
PROF. J. D. WALTERS.....Local Editor
PROF. J. T. WILLARD.....Alumni Editor

BOARD OF REGENTS.

HON. E. T. FAIRCHILD, President....Ellsworth
HON. J. S. McDOWELL, Vice-President,
Smith Center
HON. W. T. YOE, Treasurer.....Independence
HON. WM. HUNTER, Loan Comm'r, Blue Rapids
HON. MRS. SUSAN J. ST. JOHN.....Olathe
HON. CARL VROOMAN.....Parsons
HON. J. M. SATTERTHWAITE.....Douglass

PRES. E. R. NICHOLS, Sec. *ex-officio*.

LOCAL NOTES.

Doctor Sisson has been absent the past week on State sanitary work.

The students in woodwork are making patterns for a new style gasoline engine.

Four hundred fifty-five students are assigned to industrial work in the shops this term.

Professors Walters and Stoner will attend a farmers' institute at Hutchinson, December 13.

The machine-shop is building several steam turbines and other parts of the Jensen Pasteurizers.

The carpenter shop has just completed eight handsome walnut book-cases for Professor Popenoe.

The gasoline engine built by students in the shops was started last Friday and is in successful operation.

The Farm Department is feeding twenty dairy cows to test the value of condimental stock foods for milk production.

The first- and second-hour bacteriology classes had a joint discussion last Wednesday morning on the theories of immunity.

The Chemical Department is preparing a bulletin on the digestion experiments which have been made during the past two years.

The Co-operatives gave a big dinner Thanksgiving day and entertained all students who could not get a feast at their regular boarding places.

Through the kindness of Professor Eyer, the Veterinary Department has received ten cultures of various bacteria from the Chicago University.

The machine-shop apprentices are connecting the machinery and pumps in the butter and cheese rooms preparatory to the coming dairy school work.

Visitors will find just west of the old barn a seeding of a mixture of alfalfa and the new grass, *Bromus Inermus*. The brome grass would make good pasture at this date, December 11, as it seems to be uninjured by the frost.

Visitors raising either soy beans or cow peas should go to the implement shed at the barn and examine the three kinds of bean harvesters to be found there.

The Farm Department is now feeding one hundred fifty head of calves. One hundred thirty are being forced for "Baby" beef and twenty are young calves fed skim-milk.

Mrs. A. McKeever, of Valley Falls, mother of Professor McKeever, and Mrs. J. L. McKeever, of Rock Creek, his sister-in-law, were visitors at the College last week.

No visitor should fail to see cow No. 20, the "scrub cow that went to College." She was bought off the range in Lincoln county for \$30 and gave within a year milk worth, at creamery prices, \$73.75.

The Farm Department had one hundred acres in soy beans this year. The yield varied from three to thirty-five bushels per acre. Samples of a number of varieties will be on exhibition for our Grange visitors.

Isaac Zeigler, one of the teachers at the State Reformatory, visited College Tuesday last, and was shown around by Superintendent Rickman, who is an old-time friend of Mr. Zeigler's, out in Sheridan county.

Engineer Lund and his assistants have been connecting the shop drain spouts to the new sewer. This will not only flush out the sewers but will keep the roads near the shops in better condition for the heavy hauling that is done during the winter.

Our Grange visitors are invited to examine specially two machines not usually found on Kansas farms--the Kemp Manure Spreader and the Campbell Subsurface Packer. Both machines will be found more than usually profitable for Kansas farms.

E. W. Curtis, of Council Grove, our instructor in butter making, spent Tuesday arranging the machinery and apparatus for next winter's work. Mr. Curtis has arranged for ten or twelve power and hand separators and a large amount of new dairy apparatus for the Dairy School.

Nine varieties of cow peas were grown on the College farm this year and samples of the hay may be seen at the barn. The cow pea will be found to be a very profitable second crop for eastern Kansas, as it may be grown between ordinary crops and is one of our best soil enrichers.

The regular monthly sale of the Manhattan Live Stock and Sales Company held Saturday of last week was highly successful in the way of prices realized and the volume of offerings was fairly large. Several horse buyers were present and secured animals to their liking. The town was crowded with people and much interest in the proceedings was manifested. Preparations are already under way for the next sale.

From June 28 to November 30, 1900, members of the College force have held one hundred twenty-nine farmers' institutes. The total attendance has been 59,285. Arrangements have already been made for holding twenty-two institutes in December.

The Veterinary Department sent out 89,645 doses of blackleg vaccine between January 1 and December 1, 1900, so that it became necessary to prepare a new supply, which was done during the Thanksgiving vacation, when 20,000 doses of fresh blackleg vaccine were prepared.

Visitors should examine our Guernsey bull, Shylock of Darlington. He is probably one of the best bred dairy animals ever brought into the State. His dam gave four hundred thirty-eight pounds of butter in six months, while the average Kansas cow gives ninety pounds a year.

The College force has attended farmers' institutes the past week as follows: Oak Grange, Otis and Pritner; Glen Elder and Jewell, Hitchcock and Otis; Indian Creek, Popenoe and Haney; Burlingame and Melvern, Clothier and Sawdon; Peabody, Stoner and Norton; Russell, Cottrell.

There was a hare-and-hound race one morning of last week, between several members of the Faculty as the hares and a dozen fourth-year students as the hounds. The hounds did not succeed in catching the hares. The run was about three miles and the hares had five minutes start. Messrs. Lockwood, Kinsley, Westgate, Norton and Huycke represented the Faculty.

Last week the INDUSTRIALIST stated that Miss Florence Ball, our director of physical training, had been absent for several days on account of a persistent attack of the malarial fever. Though much sympathy was extended to her by her special friends, no one was greatly alarmed over her condition at first, as she was a strong young woman. She had excellent care in the family of Doctor Perry, where she made her home, and was under the treatment of a first-class physician, Doctor Roberts, of Manhattan, but her condition grew worse from day to day. Last Sunday, at 1 P. M., she died in the arms of her mother, who had been sent for and who had hastened to the death-bed of her beloved daughter. The remains were taken to her old home in Detroit, Mich., by her mother and President Nichols. Funeral services were held in the Manhattan Episcopal church, of which she had been a member, at 10 A. M. on Monday. Miss Florence Ball took charge of her work at this College on October 25, 1899, and within a very short time succeeded in working up much enthusiasm for her specialty. She came to this country at an early age, from England. Her parents settled in Detroit, Mich., where she attended public and high school. In 1895, she entered the Burnham Physical Training School for Teachers, at Milwaukee, Wis. After graduating, in 1897, she became first assistant in the same school, which position she held until her election to Manhattan. She was a pleasant, warm-hearted young woman of exemplary character, loved and respected alike by collaborators and pupils.

I would not take \$1000
for what I learned at the

DAIRY..... SCHOOL.

in three months. As a
result of this training, I
could have had four dif-
ferent positions since
spring.—FRED SHOAF.

Mr. Shoaf has just re-
fused an offer of \$60 per
month because he is do-
ing better.

Dairy School, **JANUARY
3 TO MARCH 22, 1901.**

If you do not want the ad-
vantages it offers, get a
friend interested. For full
particulars, address

PRES. E. R. NICHOLS,
Manhattan, Kansas.

GRANGE ENTERTAINMENT

COLLEGE CHAPEL

TUESDAY EVENING, DECEMBER 11, AT 7:30

Music,	-	-	-	-	College Band
Prayer,	-	-	-	-	Rev. T. M. Rickman
Music,	-	-	-	-	College Orchestra
Address of Welcome,	-	-	-	-	Hon. Sam Kimble On behalf of the Mayor.
Address of Welcome,	-	-	-	-	Pres. E. R. Nichols On behalf of the College.
Response,	-	-	-	-	A. P. Reardon McLouth.
Music,	-	-	-	-	College Orchestra
Address, "Objects of Grange,"	-	-	-	-	Prof. B. S. McFarland
Music,	-	-	-	-	College Mandolin Club
Address, "Culverts and Drainage,"	-	-	-	-	Prof. W. R. Goit Kansas City.

CHRISTMAS NUMBER

**THE
INDUSTRIALIST**

VOL. 27.

NO. 12.

Issued weekly by

**KANSAS STATE
AGRICULTURAL
COLLEGE.**

Editor-in-Chief, Pres. E. R. Nichols
Local Editor, Prof. J. D. Walters
Alumni Editor, Prof. J. T. Willard

Published by
PRINTING DEPARTMENT,
J. D. Rickman, Supt.

Entered at the Post-office, Manhattan,
Kansas, as second-class matter. Act
of July 18, 1894.

TERMS AND VACATIONS.

Winter Term, 1901, Twelve Weeks.

WEDNESDAY, JANUARY 2.—Examination for admission, at 9 A. M.

THURSDAY, JANUARY 3.—Winter term begins.

THURSDAY, JANUARY 3.—Short courses in agriculture, horticulture and dairying begin.

SATURDAY, FEBRUARY 9.—Examination.

THURSDAY AND FRIDAY, MARCH 21, 22.—Examination at close of term.

Spring Term, 1901, Eleven Weeks.

MONDAY, MARCH 25.—Examination for admission, at 9 A. M.

TUESDAY, MARCH 26.—Spring term begins.

SATURDAY, MAY 4.—Examination.

TUESDAY AND WEDNESDAY, JUNE 11, 12.—Examination at close of year.

JUNE 9 TO 13.—Exercises of commencement week.

THURSDAY, JUNE 13, AT 10 A. M.—Commencement.

JUNE 14 TO SEPTEMBER 18.—Summer vacation.

Fall Term, 1901.

WEDNESDAY, SEPTEMBER 18.—Examination for admission, at 9 A. M.

THURSDAY, SEPTEMBER 19.—College year begins.

BOARD OF REGENTS.

HON. E. T. FAIRCHILD (1903),* *President*,
Ellsworth, Ellsworth county.

HON. J. S. McDOWELL (1901), *Vice-President*,
Smith Center, Smith county.

HON. W. T. YOE (1901), *Treasurer*,
Independence, Montgomery county.

HON. WM. HUNTER (1903), *Loan Commissioner*,
Blue Rapids, Marshall county.

HON. MRS. SUSAN J. ST. JOHN (1901),
Olathe, Johnson county.

HON. CARL VROOMAN (1901),
Parsons, Labette county.

HON. J. M. SATTERTHWAITE (1903),
Douglass, Butler county.

PRES. E. R. NICHOLS. (*ex-officio*), *Secretary*.

MISS LORENA E. CLEMONS, *Assistant Secretary*.
Manhattan.

*Term Expires

THE INDUSTRIALIST.

VOL. 27.

MANHATTAN, KAN., DECEMBER 25, 1900.

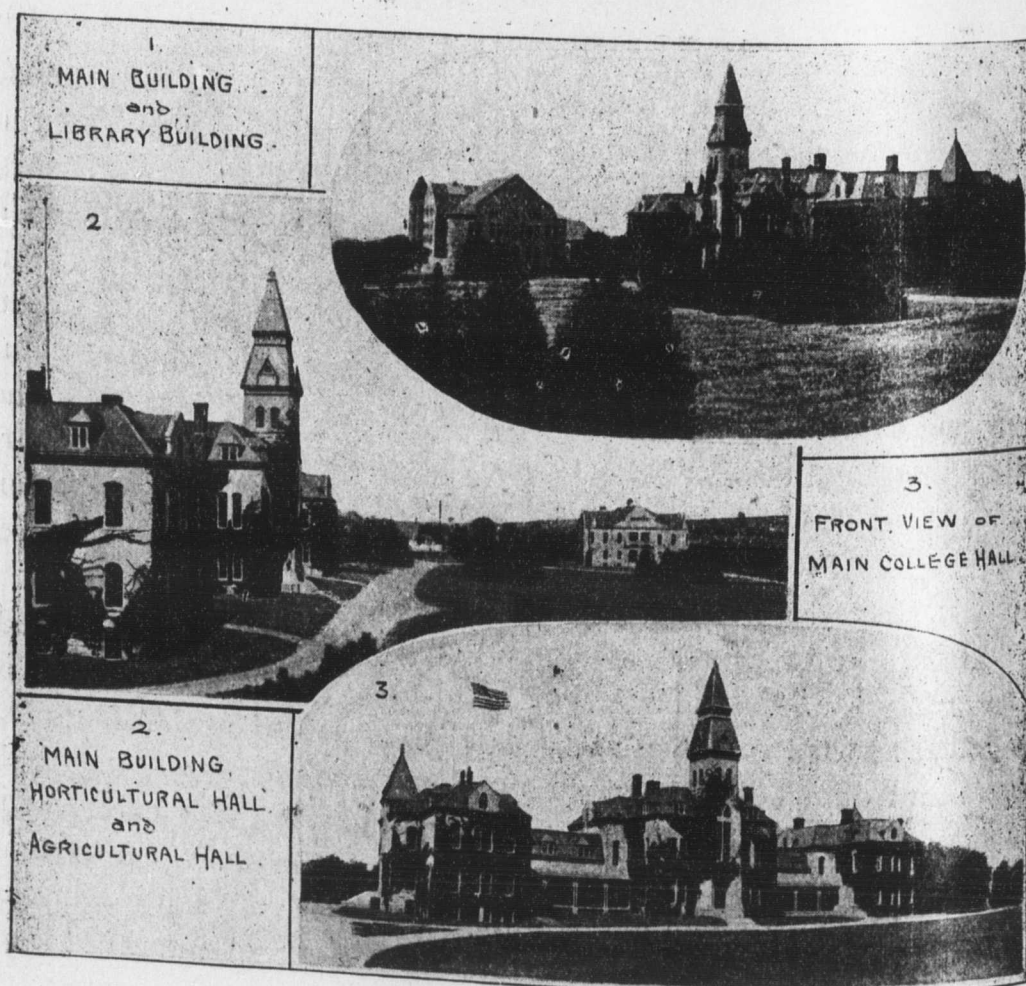
No. 12

GLIMPSES FROM THE KANSAS STATE AGRICULTURAL COLLEGE.

KANSAS is an agricultural State and this College is its most characteristic public institution. While in many of the fifty or sixty agricultural colleges of America scores of professors are employed to lecture to almost empty benches the Kansas State Agricultural College is recording an average annual increase of a hundred or more students for the past half-dozen years and its present attendance is nearly equal to the total number of agricultural students of all the New England states. The attendance for the past school year was one thousand ninety-four, and that of the present school year will probably be between fourteen and fifteen hundred. Every part of the State is represented; there are students here from almost every township.

The causes for this phenomenal growth are not difficult to find. The farmers and mechanics of Kansas appreciate the value of scientific and technical education and the Agricultural College has found and developed the means and methods of supplying their educational needs. It is an interesting fact that way back in the early seventies this College was among the very first of American schools that made manual training a part of the daily work of every student, and one of the very first that introduced systematic problem work in its workshops. It was one of the very first to introduce systematic domestic science work in its girl classes and to require practical work in horticulture and floriculture of all young women. It supplanted the study of ancient languages by extended courses in physical and biological sciences a quarter of a century ago and has steadfastly refused to reintroduce work in dead Latin and deader Greek. It has held that the drawing-board, the microscope and the chemical reagent are of infinitely more importance in the development of the farmer and mechanic than could be the dictionaries, grammars, and belles-letters.

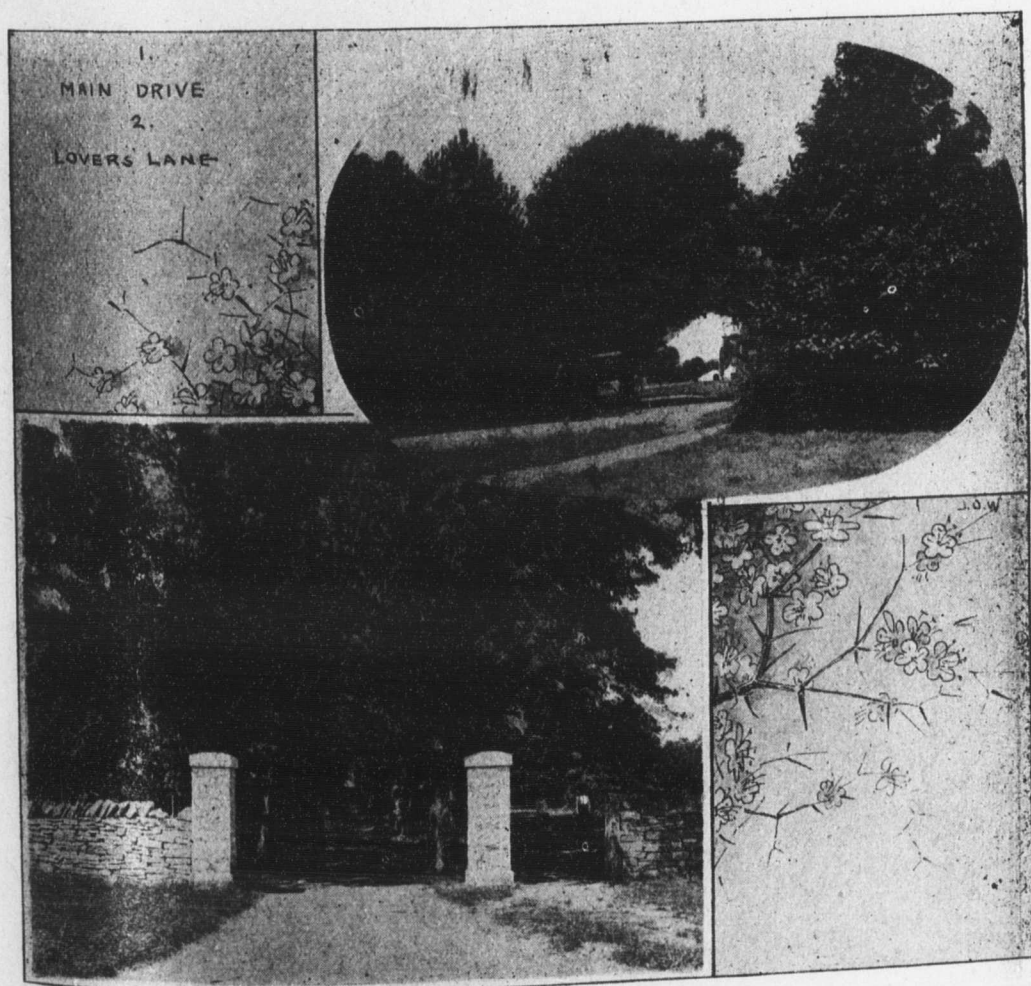
For young men and young women who are determined to get an education in the lines indicated, and who are willing to work hard and persistently, the Agricultural College is an ideal institution. Its different courses are closely adjusted to the ends to be attained. All tuition is entirely free and the expenses for board, lodging, text-books and stationery are lower, perhaps, than at any other first-class technical college in the country.



Manhattan is an ideal college town and easy of access. The College buildings are handsome and substantial. Well-directed student labor, extending through a period of nearly three decades, has made the campus a landscape of rare beauty—of sunny lawns, shady groves, picturesque clumps of characteristic trees, interesting groups of flowering bushes, and well-kept gravelled driveways and walks.

It is not the purpose of this article to speak in detail of the courses of study and the work in the classrooms, laboratories and shops. Young men and women who wish to learn of the provided

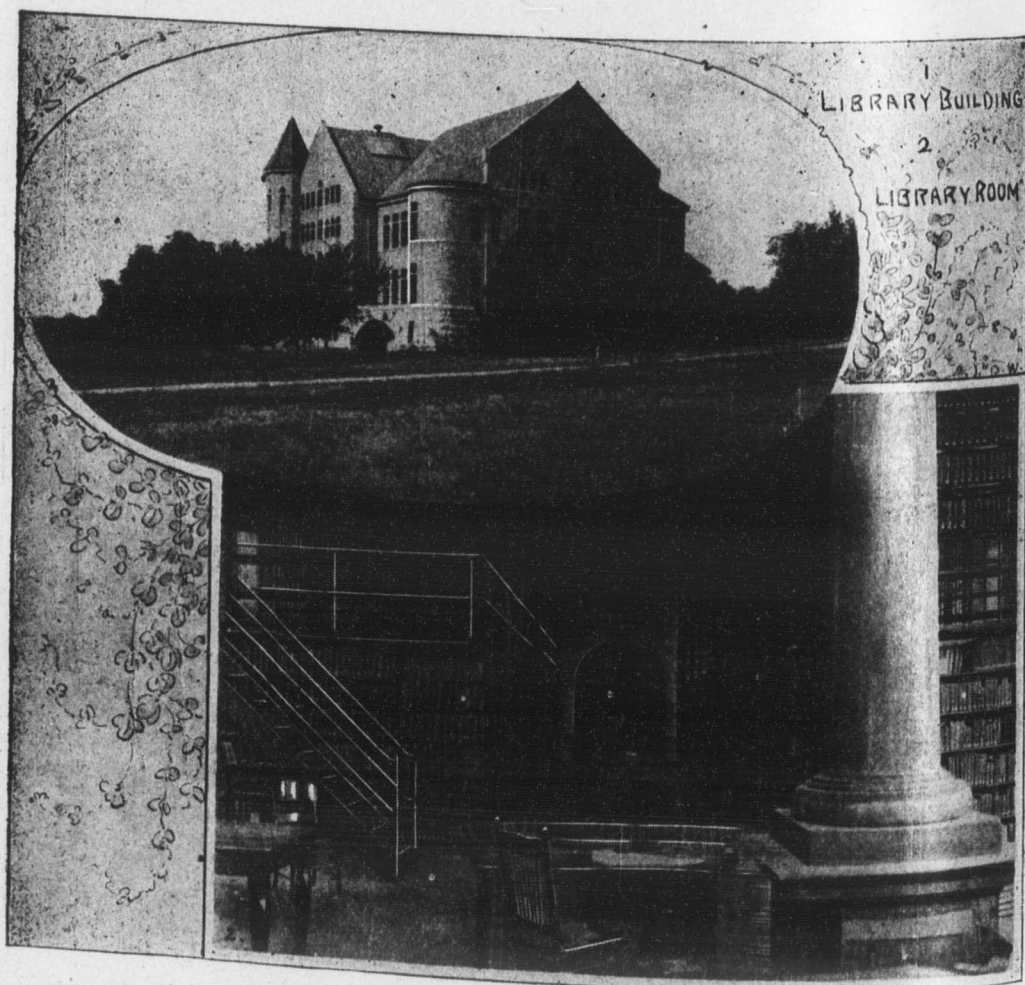
work of instruction should send to the Secretary of the College for copies of the catalogue. We simply intend to enumerate some of the educational means of the institution—the buildings, the library, the laboratories, and the mechanical workshops, and to exhibit by means of photo-engravings some of their characteristic features. To patrons or friends of the College who have never been at Manhattan these descriptions and pictures will prove



instructive, and to those who have been with us they will be interesting souvenirs.

The College grounds and buildings occupy an elevation at the western limits of the city of Manhattan, and face toward the city. The location is an exceptionally favorable and beautiful one. The campus includes an irregular plat in the midst of a fine farm, with orchard, vineyard and sample gardens attached, the whole being surrounded by durable stone walls. The grounds are tastefully laid out and extensively planted, according to the design of a professional landscape-gardener. Well-graveled drives

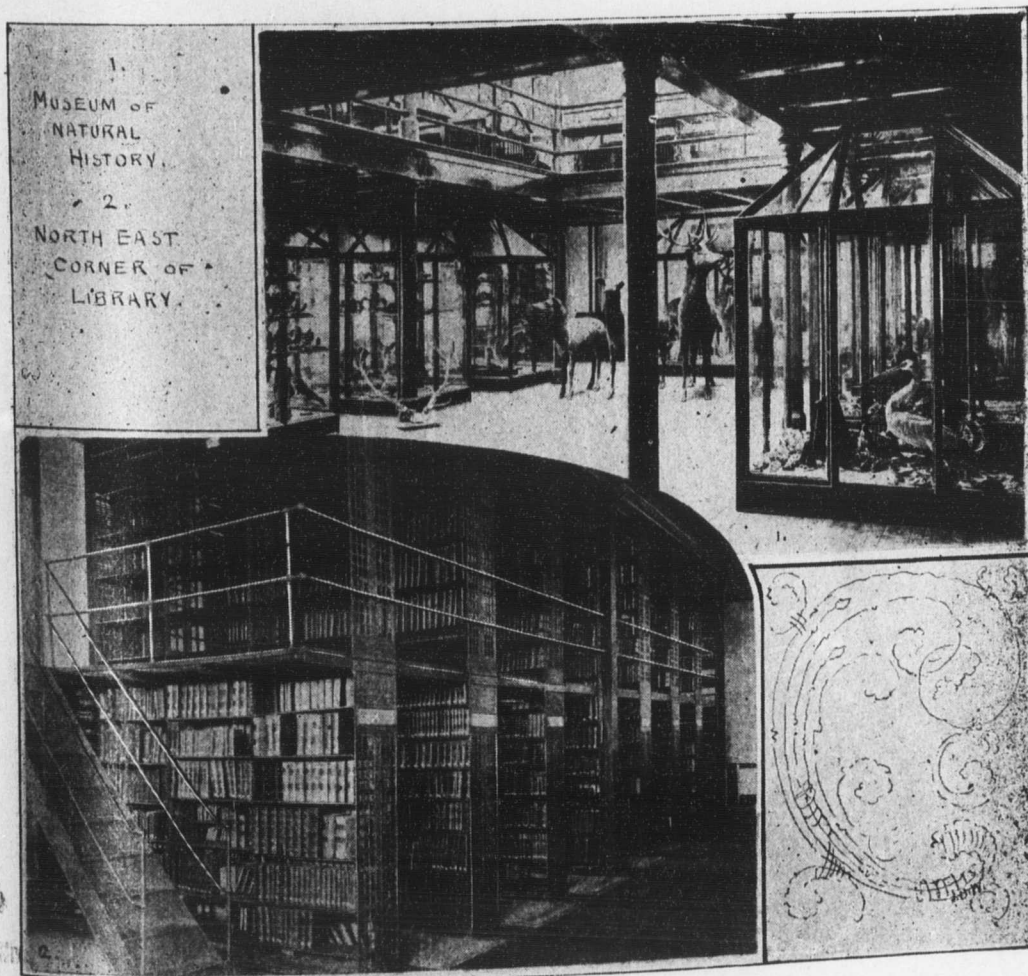
and good walks lead to the various buildings, all of which are built of white Manhattan limestone. The recitation rooms are excellently lighted and ventilated, and all are heated by steam or hot water. A complete system of sewerage has been provided. The College owns 323 acres of land, valued at \$39,700, and leases 120 acres additional. The greater portion of this 443 acres is devoted to agricultural and horticultural experiments.



COLLEGE HALL (MAIN) 152x250 feet in extreme dimensions, arranged in three distinct structures, with connecting corridors. This building contains, in its two stories and basement, offices of the President and Secretary, cloak rooms, studies, chapel, post-office, and offices and classrooms of the Departments of Drawing, Music, Physics and Electrical Engineering, Mathematics, Oratory, English, and Printing. Cost, \$79,000. The value of equipment and apparatus in this building is as follows: Executive, \$5044; Drawing, \$2882; Music, \$1355; Physics and Electrical En-

gineering, \$5365; Mathematics, \$1849; Oratory, \$45; English, \$123; Printing, \$4368.

AGRICULTURAL HALL, 90x95 feet, two stories and basement. This contains offices, classrooms and laboratories for the Department of Agriculture. It is equipped with modern improved machinery for butter and cheese making, milk testing, etc. All the work rooms are lined with opalite tiling. Cost, \$25,000; equip-



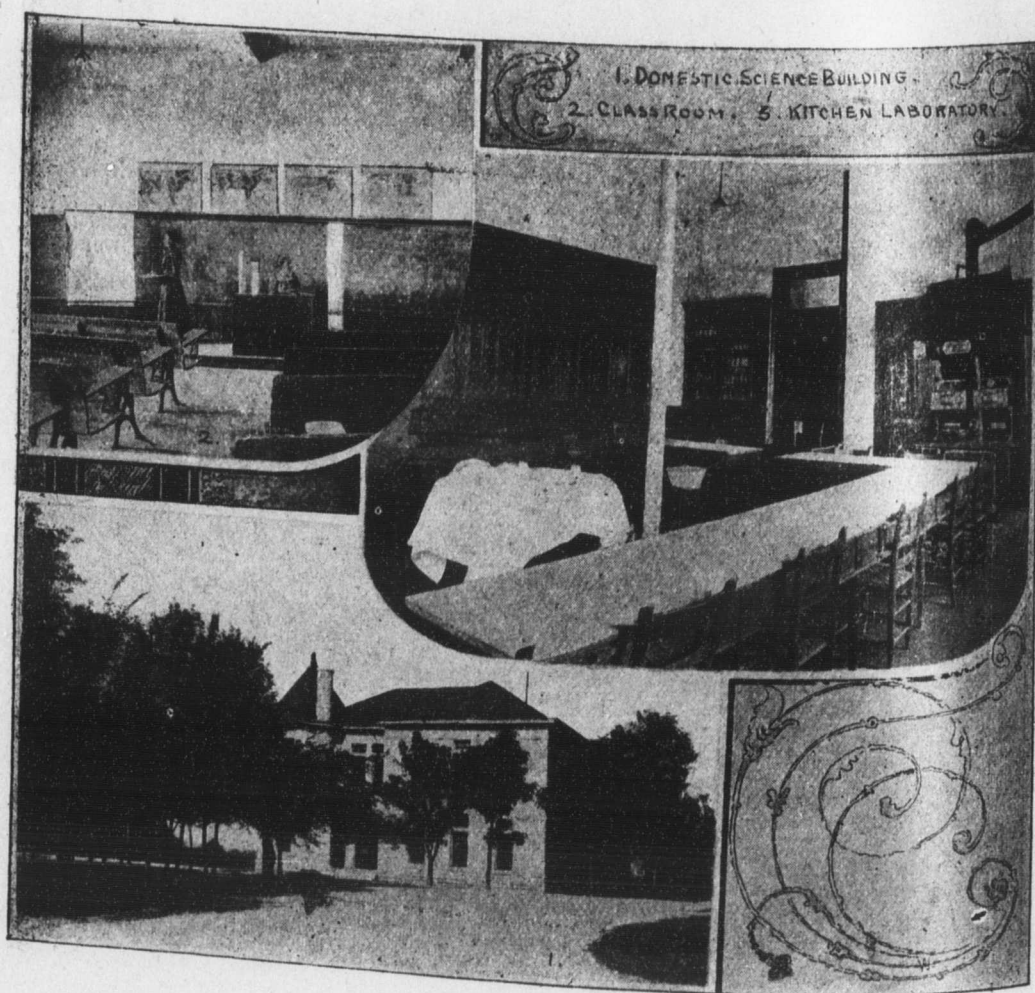
ment and apparatus, \$19,286. *

CHEMICAL LABORATORY. This building burned to the ground on May 31, of the present year. The next legislature will undoubtedly make sufficient appropriations to erect a handsome, modern structure and provide it with ample apparatus for the work of the Departments of Physics and Chemistry.

MECHANICS HALL contains the following rooms, forming a connected structure: Wood shop, two stories, 40x103 feet. The upper floor contains offices and classrooms for the Department of Mechanical Engineering. The lower floor contains benches for

220 students and a complete set of wood-working machinery and tools. Machine shops, 40x80 feet; Blacksmith shop, 40x50 feet; Iron foundry, 40x50 feet; Brass foundry, 16x30 feet; Pipe-fitting room, 18x50 feet; Engineering laboratory, 35x40 feet; Power room, 35x40 feet; Boiler room 40x75 feet. Cost of buildings, \$21,800. Value of equipment, \$31,806.

HORTICULTURAL HALL, 32x80 feet, one story and cellar, having



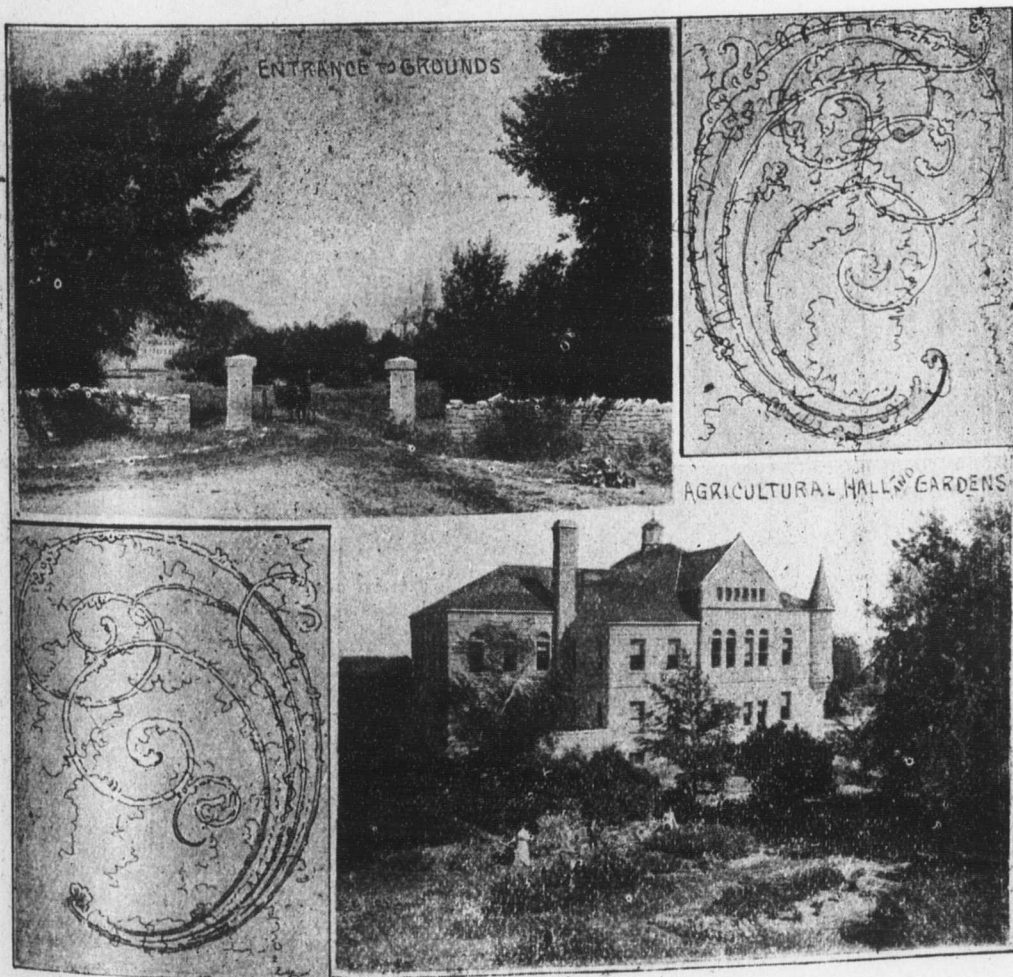
museum, classroom and storage, with greenhouses attached. Cost, \$4200. Value of equipment and apparatus, \$18,929.

HORTICULTURAL LABORATORY, with five propagating houses and insectary attached. Cost, \$5000.

ARMORY, 46x96, two stories. This building, which has served many purposes, is now fitted below for an armory and drill room and office of Military Department, also dressing room and bath room for the various athletic teams, and above are classrooms, laboratories, offices and museum of the Veterinary Department.

Cost of building, \$11,250. Value of equipment and apparatus: Military, \$8172; Veterinary, \$12,193.

LIBRARY AND AGRICULTURAL SCIENCE HALL, 100 x 140 feet, three and four stories. This building provides permanent quarters for the library, with ample reading rooms and offices, classrooms and laboratories for the Department of Botany and Entomology, a classroom for the Department of History and Economics, general

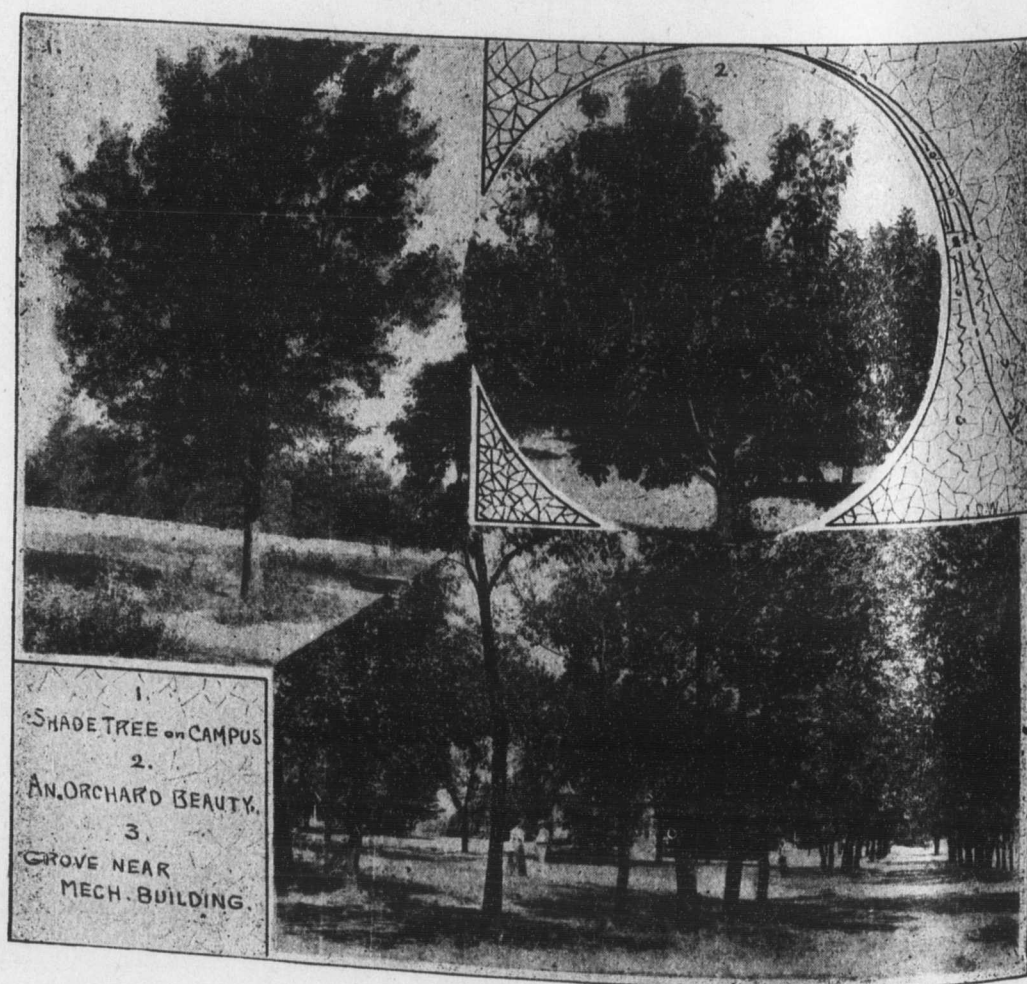


museum, girls' gymnasium, and rooms for the various literary societies. Cost of building, \$57,750. Value of equipment and apparatus: Botany, \$17,009; History and Economics, \$313; Entomology, \$3446. For description of library see page 140.

DOMESTIC SCIENCE HALL, 84 x 70 feet, containing two stories and basement. The first floor contains office, lecture-rooms and laboratories for the Department of Domestic Science. The second floor is occupied by the Department of Domestic Art. The basement is used by the Students' Coöperative Association, in which noon lunches are served except on Sundays. Cost of

building, \$15,000. Value of apparatus: Domestic Science, \$2200; Domestic Art, \$897.

THE FARM BARN, a double but connected stone structure, 50x75 feet and 48x96 feet, with an addition of sheds and experimental pens 40x50 feet. A basement, having stalls for seventy-five head of cattle, silos, motor room and granaries underlies the entire structure. Cost, \$10,831.



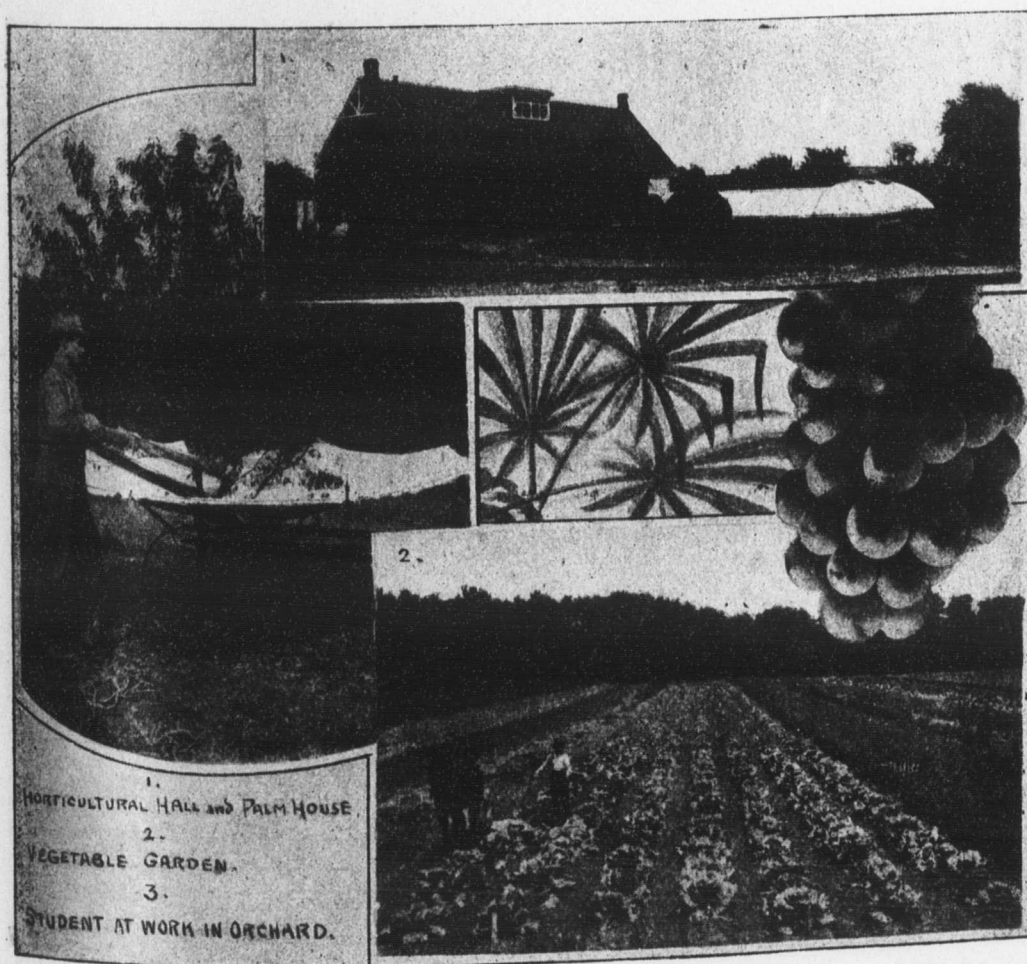
THE DAIRY BARN, 40x175 feet. This will be fitted up with modern swinging stalls for 80 head of cows, arranged in two rows, with driveway between. Cost of building, \$3000.

THE HORTICULTURAL BARN, a stone building containing store-room, granary, and stables for several horses. Cost, \$1000.

THE LIBRARY.

The College library is one of the most important supplements to classroom instruction. It consists of over 22,000 bound volumes and about 17,000 pamphlets. These books are mainly kept

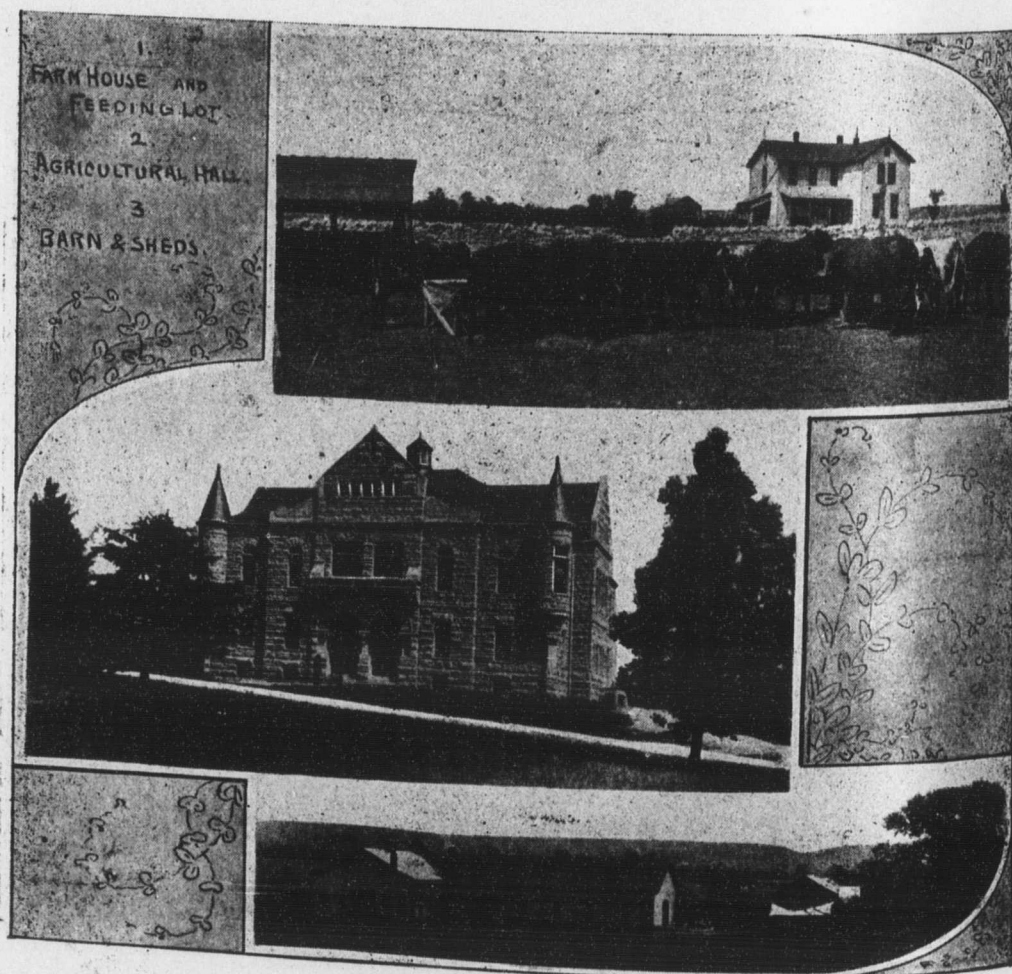
in a general library, but many volumes of technical character are withdrawn and held in departmental libraries. All of the books are indexed in card catalogues, which show their author, title, and to a large degree the details of their contents; also their location. Students are allowed free access to the shelves, a privilege and a source of culture that is given in perhaps no other library of its size in the country. Students may draw books for home use



under simple and liberal regulations. The library is open daily, except on legal holidays, from 7 A. M. to 6 P. M. and the librarian or an assistant is in constant attendance during this period to assist those who use the books. By all these means the library is utilized to the fullest extent and is of inestimable value.

The College subscribes for the leading literary, scientific and agricultural journals, while the principal daily and weekly papers of Kansas, and many from other states, are received in exchange for the College publications. All these are kept on file for the use of students and Faculty. The College has been designated as a

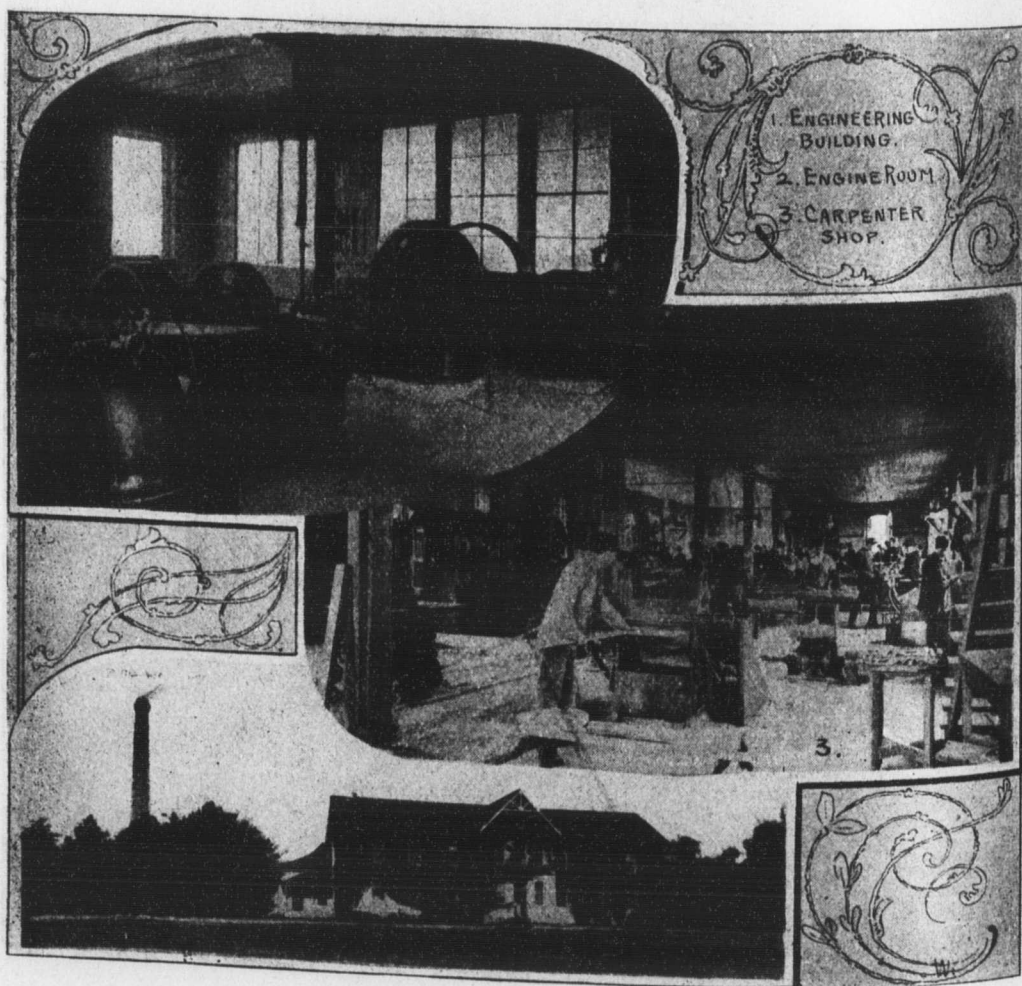
depository of United States public documents for the fifth congressional district of Kansas, and 2260 volumes have already been received on this account. An approximate estimate of the number of books, including public reports and bound periodicals, by classes, is as follows:



<i>Classes.</i>	<i>Vols.</i>
Agriculture.....	2960
Horticulture.....	600
Mechanics and engineering.....	552
Mathematics and astronomy.....	270
Physics and meteorology.....	359
Chemistry and mineralogy.....	330
Geology.....	370
Botany.....	1100
Zoölogy and entomology.....	570
Biology.....	106
Geography and travels.....	265
Dictionaries and cyclopedias.....	206
Education.....	445
Law.....	190
Administrative reports.....	384
Public documents on deposit.....	2260
Fiction.....	500
Poetry.....	200

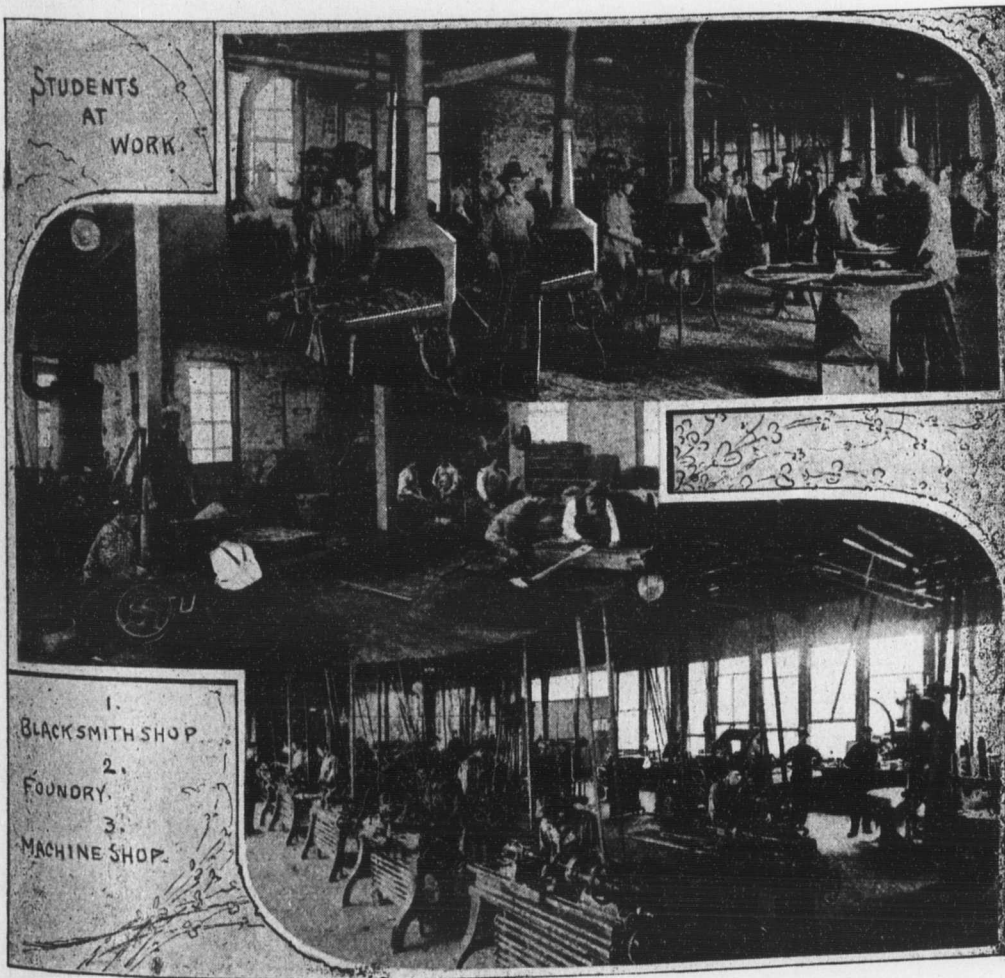
<i>Classes.</i>	<i>Vols.</i>
Medical and veterinary science.....	396
Military science.....	136
Domestic science.....	130
Economic science.....	673
History and political science.....	1466
Printing.....	84
Industrial art and design.....	236
English language and literature.....	1200
Logic and philosophy.....	206
General science.....	850
Religion and morals.....	725
Fine arts.....	261
Bound magazines.....	1371
Music.....	69
History of industry.....	200
Oratory.....	60
Experiment Station bulletins and reports.....	1686
Miscellaneous books.....	59

Throughout the first year young men take their industrial in the shops. They thus get a familiarity with tools and methods which enables them to do the woodwork and ironwork commonly needed on the farm, and which is useful to all everywhere. The young women take sewing during the first year, and a certain amount of cooking practice. The utility of this needs no argument. After the first year there are differences in the industrial requirements



corresponding to the differences in the several courses of study. In the Domestic Science course the various lines of household art constitute almost the entire industrial work, floriculture being given one term and another being open to choice. In the Mechanical Engineering course shop work in one or another of its various kinds is required every term. In the Agriculture course the industrials include practical instruction in the fields, orchards, gardens, and dairy, and in feeding. The Science course offers more latitude in the choice of industrials after the first year. Young women may take sewing, cooking, printing, floriculture, or music.

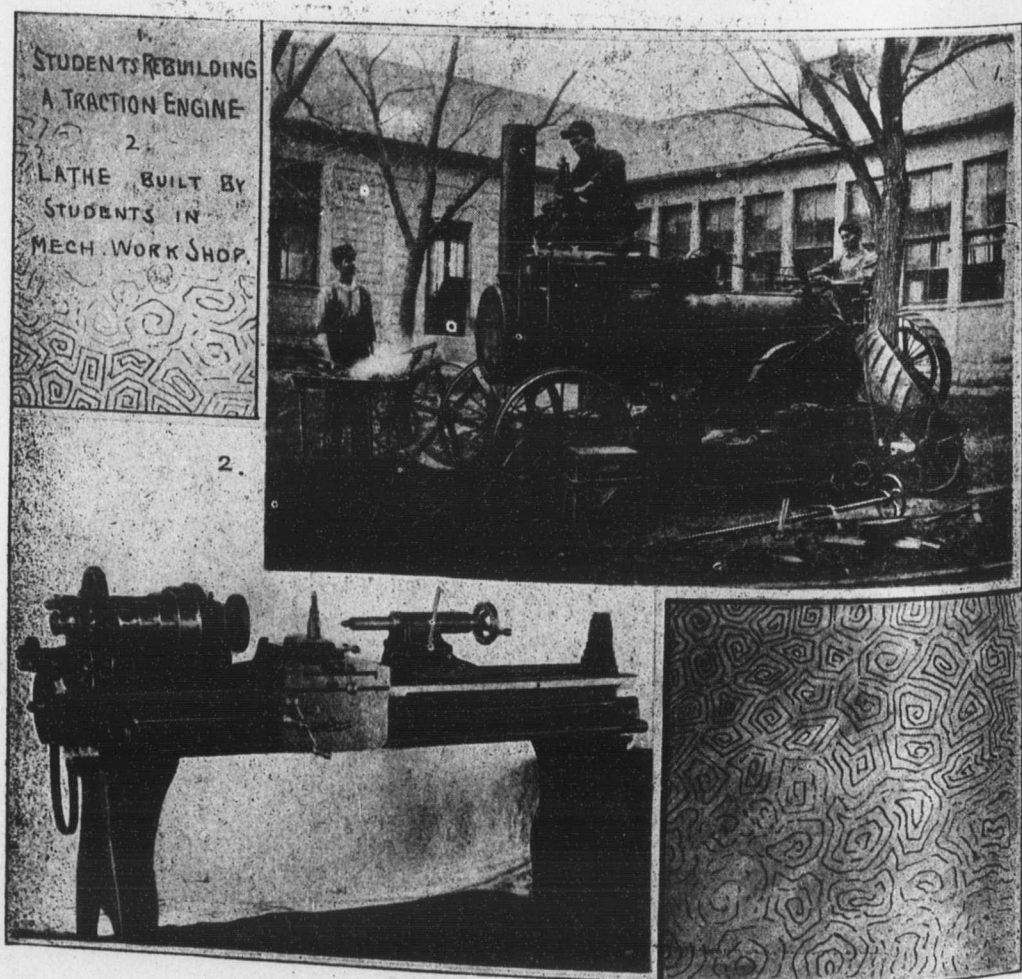
Young men may have woodwork, ironwork, dairying, farming, gardening, fruit growing, or printing. The availability of these industrials depends somewhat on the season in some cases, so that not all are open each term. In addition to the above, a limited number of students are allowed typewriting as the industrial, upon the recommendation of the head of the department having a machine.



The labor of students during assigned industrial time is not paid for, as its object is educational and the student receives full value in the training afforded. In all the instruction in industrial lines special attention is given to making the courses systematic and progressive. Students desiring to give extra attention to such work are allowed every opportunity that the departments can afford. Many students acquire sufficient proficiency to be able to turn their skill to a financial advantage during the later terms of their courses, and all who apply themselves with any diligence obtain a training that cannot fail to be of great benefit to them in after life.

COLLEGE NEEDS REVIEWED BY A STUDENT.

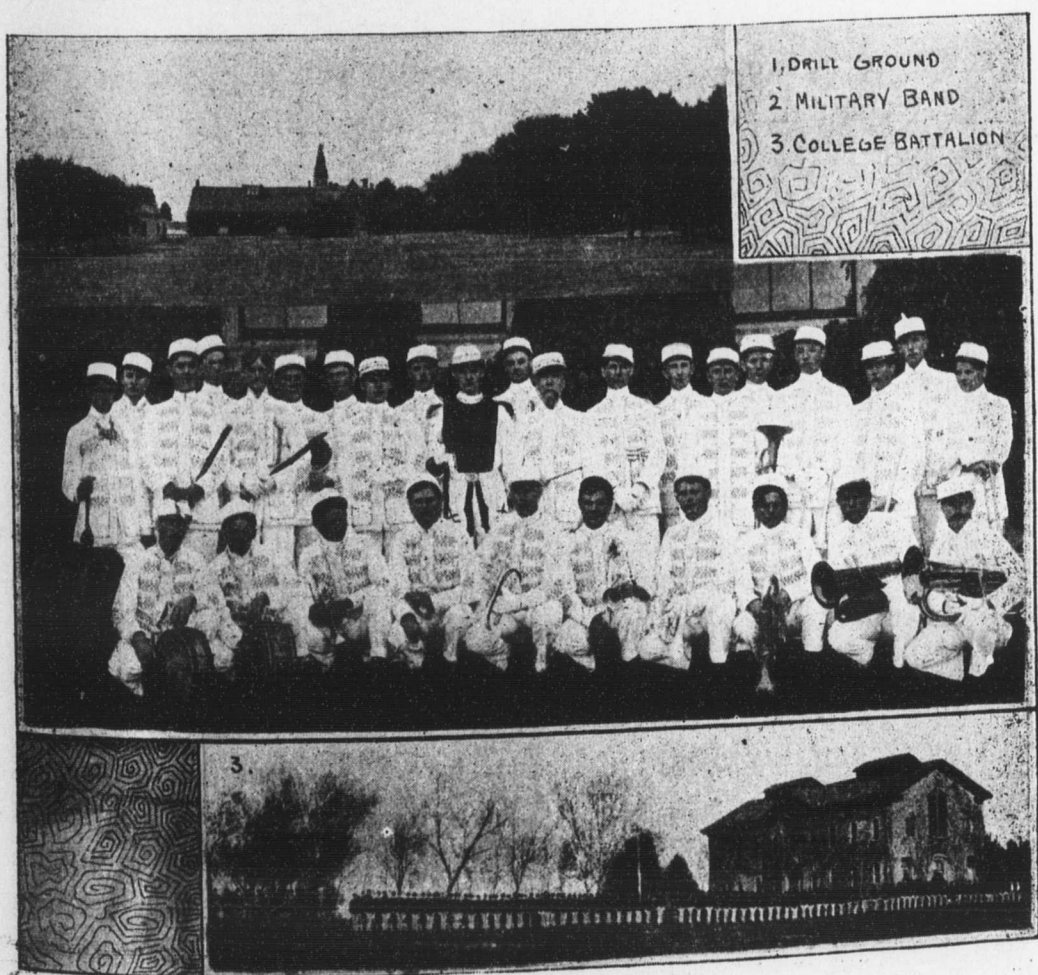
THE following excerpts are from an article by a senior student, in the *Students' Herald*. It is reprinted because it discusses the most vital question that confronts the Agricultural College at present—the want of more classrooms and laboratories—from the standpoint of the student. Next to the teacher, the student who has been forced to work in overcrowded shops and laborato-



ries, who has sat on window-benches during recitations, or who has been told innumerable times that this or that room was over-filled and that he could not enter, knows what inadequacy of space means in an institution. The Agricultural College must have more room or stop growing; there is no alternative:

"The Kansas Agricultural College at Manhattan has made a wonderful growth within the past few years. In the early '90s the attendance seemed fixed at 500, and in '95 was 572. Then the people began to learn of our superior advantages and the attendance for 1896 was 647. This growing period continued and the

743 of 1897, 803 of 1898, 870 of 1899 and phenomenal 1094 of last year all point to an attendance of 1500 this year. The reason for this remarkable growth exists in the fact that the Kansas Agricultural College gives the education that our young people want. Farmer boys and girls see the advantage open to them; they do not care to attend the thirty odd classical colleges of the State. They realize the value of a scientific training along some special



line with a liberal education besides and they go to the only institution in the State that offers such an education, and that is the Kansas State Agricultural College.

"At the College the students from the common schools of the towns and country enter right where they left off at home and go on broadening out into trained men and women in those branches of industry in which college people have been so successful—Domestic Science, Agriculture, and Electrical and Mechanical Engineering. Our students are required to work in the laboratories, gardens, and shops, and thus acquire a love for work and a prac-

tical knowledge of all they learn in the classrooms. We students are all proud of our college. We know that it is the largest agricultural college in the world; its wood- and iron-workshops the largest in the West and its Domestic Science Department unexcelled. We realize the vast influence for good that the extensive experiments carried on here have in the State. We are satisfied with its lines of practical work and its methods and we think it is the best place any young person can attend, both because of its courses of study and methods and because of the lasting influence it exerts on the moral nature of its students.

"That the national government has done more for the Kansas Agricultural College than Kansas herself has given us a feeling of shame, yet the ten or eleven fine buildings and their equipments provided by the State are, to say the least, a grand monument to our State free educational system. Our increased attendance has so crowded us for the last four years that we wonder whether our State knows that within that time our attendance has just about doubled itself. Classrooms are in such demand and students so numerous that some studies have had to be entirely dropped from the course and a great many changes made so that needed instruction will come later in the year. But what if it never is provided for? Here are some of the most pressing needs of the College. Many others exist, and the Regents do not ask for them because they know we have to have these:

"Our Chemistry Building, with its classrooms, laboratories, museums, offices, quarters for the Experiment Station work, and nearly all the apparatus of such a building, was destroyed by fire last year. This loss has greatly crippled the College. It has compelled the two hundred students who receive instruction in chemistry to either lose this work or to receive it under great difficulties. Chemistry, as every one knows, is the basis for our present-day sciences, and without it Agriculture, Mechanics or Domestic Science cannot be properly taught. We expect the legislature to vote us money for a new chemistry building, with accommodations suited to our attendance, and with offices and laboratories for the Experiment Station. This building will cost about \$80,000 if it meets our needs. The Regents plan to have in it quarters for the Department of Physics. This department will give instruction to about four hundred students this year, among them the senior engineers, who should go rather deeply into the

subject. At present only two rooms are used by the Physics Department. Laboratory privileges do not exist, apparatus is not provided, and, in fact, we do not get the benefit out of this most important of natural sciences. With the enormous number of students we now have, physics, as related to agriculture and engineering, is impossible. Laboratories, with apparatus, where the student may perform the experiments for himself, which are so necessary for understanding this subject, are urgently needed. As this fundamental natural science is the only one in the College that is in no way provided for, we beg leave to call it the crying need.

"The Regents will also ask for a building and greenhouse for the Department of Horticulture and Entomology. The need of classroom, office room and work room make this necessary. The increasing demand for permanent collections of fruits, and forest trees and shrubs, in a condition that will permit their study; the uncared-for condition of our insect collections and the want of laboratories for work in this department are known to all, and the fact that our greenhouses are old and very small makes the erection of a building for this very important department a thing, not only needed, but absolutely necessary. An appropriation of \$35,000 will be asked for this purpose.

"Now as to another building: Why can't we have an auditorium? Three hundred students are debarred from the College announcements and our morning exercises. Our present chapel does not accommodate our lecture course. Our literary societies are crowded and no room exists for new ones. We need a large auditorium that will be the center of our social as well as our intellectual life. Help us to get it.

"As has been said, many other things will be asked for, among which will be \$10,000 for pure-bred stock and \$10,000 for steer and hog experiments. Our agricultural students may never have seen a pure-bred animal. They may not know how to judge or care for one, and as things are at present, we are not able to give such instruction. A trio of each of the leading breeds of beef, dairy and general-purpose cattle should be here. As for the feeding experiments, each year Kansas feeds cattle and hogs in immense numbers, and as a rule those men who know how to conduct the business make money at it while the beginners lose. The Kansas State Agricultural College should lead in feeding and

should develop new methods whereby the people of the State may profit. Let us have money for steers and hogs that not only the students but the State may learn new methods and combinations of feeding. Improvements in our shop, new testing and other machinery for the laboratory are needed. The appropriations for salaries, etc., are needed. It is hoped that all who in any way can will help the Agricultural College of Kansas."

EXPERIMENT STATIONS FOR THE POOR FARMS.

THE Kansas Experiment Station is situated one hundred eighteen miles west of Kansas City. Whatever combination of feeds will make a steer gain or a cow give milk or a hog fatten at the Station will produce the same effects anywhere in the State, and the results obtained in feeding experiments made by this Station are accepted by farmers in all parts of the State as being directly applicable on their own farms.

Eastern, middle and western Kansas have practically each a distinct climate, each needing different varieties of grasses and grains and each requiring somewhat different methods of handling the soil. For this reason, while any improvement in methods of feeding recommended by the Station is immediately tried in all parts of the State, our recommendations in regard to field work are taken up slowly. Farmers usually say of new field methods, that they may be all right at Manhattan but that the soil and rainfall on their farms are different. The result is that farmers are very reluctant to try methods of field practice worked out by the Station, even those that are of general application throughout the State, because they are afraid that the methods are not adapted to their particular farms. An example or two will illustrate this.

The Kansas Experiment Station has been testing for several years the Campbell system of subsurface packing and the results obtained on the College farm indicate that this method should be practiced in dry times on every farm in the State. A field adjoining the College farm had been in corn for thirty years or more until all the vegetable matter was "burned" out of the soil and it drifted badly with every high wind. One spring this field was plowed and harrowed in the usual way. A high wind came and the air was filled with the soil all the way from this field to the main street of Manhattan, a mile and a half. The next year this

field was plowed, the teams stopped at 11 A. M. and packed with a subsurface packer the ground that had been plowed during the forenoon. At night the teams stopped in time to pack what had been plowed in the afternoon. Just after the work of plowing the field was finished a wind blew at the rate of thirty-five miles an hour all one day. No dust could be seen blowing from the field. The subsurface packing prevented it. In the past three years we have never failed to get a stand of any kind of grass, alfalfa, clover, millet or wheat where the ground had been packed, while if dry we have failed with all these crops where the packer has not been used.

A farmer in Russell county puts in two hundred to three hundred acres of wheat each year and has made it a rule to pack the ground as fast as plowed. Last fall all his neighbors insisted that this packing was a waste of time, and finally this farmer decided that as all his neighbors agreed they must be right and he stopped the packing, finishing up the rest of his land by plowing and harrowing in the usual way. The land that was not packed yielded thirteen bushels of wheat per acre; the land that was packed yielded thirty-three to forty bushels per acre. The use of the subsurface packer is a great help in keeping the land from blowing; it makes a good seed-bed and is one of the best methods of conserving the moisture. We have recommended it for several years and believe that its use should become general on Kansas farms, and yet few farmers pack their ground. They think the soil and climate of the College farm is different from their own.

Men from the Kansas Experiment Station have traveled thousands of miles in the State in studying methods of alfalfa growing under all our conditions of soil and climate. We believe that by the adoption of one or another of the many methods used in the State that alfalfa can be made one of the most paying crops on ninety per cent of the land in Kansas, yet not over one-fourth of the farmers of the State raise alfalfa. In a certain locality we were told two years ago that while our methods might be adapted to some parts of the State, alfalfa could not be grown there; the best farmers had tried it, every trial had resulted in a total failure and it was proved beyond question that alfalfa could not be grown in their county. This fall, Station men visited this county again, found a farmer who had harvested five crops of alfalfa this summer from one field and who had solved all the difficulties in the way of growing alfalfa in his

section. The neighbors of this farmer are now convinced that they were mistaken and will again try alfalfa growing.

These examples of packing the soil and growing alfalfa are only two out of hundreds. The majority of the farmers of the State will accept a new method of feeding readily, but in field work they insist on seeing a method applied successfully in their own locality, under their own conditions of soil and climate, before they will use it on their own farms.

Most of the counties of the State maintain poor-farms, or county homes for the indigent. These farms are usually situated so that the work on them can conveniently be observed by most of the citizens of the county in which they are situated. Why not utilize these farms for conducting field experiments? It would not cost the county more than one to two hundred dollars a year for necessary implements and seeds. The State Experiment Station could keep on making the preliminary experiments, as it is doing now at Manhattan. Whenever the Station found a new plant, a new variety or a new method of crop production that promised well for a particular section of the State, the Station could immediately send recommendations to the county commissioners in the counties concerned and a trial could be made on the poor-farm, where it could be watched by every citizen. The expense would be small, and if the new things failed, the farmers in that county would be saved the expense of making individual trials on their own farms. If the trial was successful, the farmers in that county would know that the crop or method under trial was adapted to their home conditions and they would have the confidence to immediately introduce it on their own farms. In many cases the adoption of a new method would mean thousands of dollars profit in a year to the farmers of a single county.

A change in the law may be necessary to enable the county commissioners to carry on such work on the poor-farms, and provision would have to be made to pay traveling expenses of Experiment Station men when called to visit these farms.

A careful consideration of this plan is asked of the citizens of Kansas. It seems to the writer to offer a practical and cheap method of bringing quickly the field work of the Experiment Station directly to the farmers' own localities and promises to save the enormous expense now made necessary by every farmer making experiments at his own expense.

H. M. COTTRELL.

SEED SAVING.

SOME years ago this Experiment Station harvested corn while the grain was in the milk. When the ears became dry the kernels were shrunken and very loose on the cob. This corn was thoroughly dried when harvested and was kept in a dry, well ventilated place through the winter. It germinated well in the spring. Under ordinary conditions but little of such corn will grow.

A test of forty varieties of corn was made by this Station one cold, wet spring when many good farmers were compelled to re-plant. A number of varieties were secured from a firm who kiln-dried their seed-corn. This kiln-dried corn was planted in plats scattered in various parts of the field, and when the plants from the kiln-dried seed were six inches high those from the seed not dried were only half as high.

The tests with well dried corn cut in the milk and with the kiln-dried seed both show the value of thoroughly dried corn.

It was very dry the past summer at the time the corn was filling and much of the seed will be loose on the cob, immature and weak. Especial care will be needed this winter in taking care of this seed. As solid ears should be selected as possible and if the most vigorous growth is desired for next spring these ears should be thoroughly dried by artificial heat as soon as gathered. A loft through which a stovepipe passes is a good place to dry corn. After the ears become thoroughly dry they should be stored in a dry place in such a way that they will not heat.

Kafir-corn has been nearly a failure in many places in the State this year and even more care will be needed in selecting Kafir-corn seed than with corn. Only well-matured, compact heads should be selected and these should be kept in a dry, well-aired place until planting time. Do not thrash until just before planting. Thousands of acres of Kafir-corn had to be replanted in the spring of 1900 and in most cases the fault came from using seed that had become heated in the bin after being thrashed. Many times Kafir-corn will grow even after it has been thrashed and stored all winter in a bin, but most of the failures come from using such seed and we advise that Kafir-corn intended for seed should always be stored through the winter in the head.

Recently the newspapers have had many discussions about wheat running out and many of the millers and wheat growers have advocated fresh importations of the hard wheat, chiefly

grown in Kansas on the ground that this wheat is deteriorating. This Station has no data in regard to hard wheat, but from our experience with other wheats and other grains we doubt if a new importation is either necessary or advisable. Zimmerman soft wheat has been grown on the College farm more than twenty-five years without any renewal of seed and is superior in yield, hardness and quality to any other of the thousands of varieties of soft wheat that we have tested. Many farmers have bought Zimmerman seed-wheat from the College, and in one case a farmer purchased seed of this variety three different times, the last two times because his seed had run out.

Why did the Zimmerman run out for this farmer and keep up to its best standard for the College? Difference in method of selecting the seed-wheat is probably the reason. Wheat intended for seed on the College farm is carefully cleaned through a good fanning mill. The cleaned wheat is recleaned, using coarse sieves and strong blast in the mill. The second cleaning gives us not only clean seed but the largest and heaviest grains. The wheat used for seed is taken from that part of the field which gives the heaviest yield. Where wheat is taken from the bin to be cleaned for seed without regard to what part of the field it is grown, it will be found that the largest and heaviest grains come from parts of the field where the plants have stooled the least and are thinnest on the ground. Continuous selection of such wheat in time will breed up a strain that is not prolific.

While there are exceptions, in general it may be said that the best seed for any particular locality in Kansas is well-bred seed from stock that has been grown for a number of years in or near that locality. Seeds from eastern Kansas is not adapted to the western part of the State. When this Station first began to push Kafir-corn, we found that when seed grown on the College farm was planted one hundred fifty miles west of us, but few plants matured seed. A careful selection from the heads that did mature soon produced a grain that matured well in this western section. Norton is situated two hundred eighty-five miles west of the eastern line of Kansas, so that it is pretty well out west. We met farmers this summer in the western tier of counties who had found that seed from as far east as Norton did not produce nearly as good crops as home-grown seed.

What we need in Kansas is not new "blood" in seeds, nor seeds

from other states or countries, but a careful selection and breeding up of plants that have already become acclimated and thrive under our conditions.

H. M. COTTRELL.

HARD WHEAT.

A committee from the grain dealers' and millers' association of Kansas have issued a circular to the farmers of the State, making the proposition to furnish seed of Russian wheat for the purpose of displacing the present deteriorated soft varieties by improved hard varieties. The work of selecting these hard varieties was done by a graduate of the Kansas State Agricultural College, Mr. M. A. Carleton, cerealist of the U. S. Department. We clip from the circular the following:

"Since the hard winter wheat variety, known as the Russian Turkey, is the best adapted for Kansas soil and climate, and in quality for flour equal to any grown in the world, it is very important that in order to preserve the reputation which we have gained the quality of our wheat be retained; as it is a known fact that from resowing the same for a number of years on the same ground the quality deteriorates so that in many localities it has changed to a yellow, softer berry, instead of the original dark red hard wheat, which demands a premium of two and three cents on the market, it has been recommended by interested grain dealers and millers that a lot of fresh seed wheat be imported from South Russia, from where it was brought originally in 1873, which will be furnished to the farmers at actual cost. Through the assistance of Mr. M. A. Carleton, cerealist of U. S. Department of Agriculture at Washington, D. C., who was sent to Europe and Asia last summer to select and gather suitable varieties of grain for the United States, we are advised that the best hard winter wheat suitable for Kansas should be obtained from Central Crimea, where he found a colony of Mennonites who make it a specialty of raising pure, clean, hard Turkey wheat, and as this year's crop is of a good quality, free from smut or any objectional weeds, Mr. Carleton thinks it is the proper time to import a lot of this wheat for next year's seeding. It is estimated that the stock may cost about \$2.25 per bushel, delivered to the respective railroad stations of every county in the State, if shipped in car-lots from the seaboard."

A guarantee is given the purchaser that the wheat will not cost to exceed \$2.25, and should the actual cost be less than that amount the difference will be refunded.

TWENTY-NINTH ANNUAL SESSION OF THE STATE GRANGE.

The Kansas State Grange was in annual session here last week. The opening meeting was held in the I. O. O. F. hall, and upon roll-call and presentation of credentials nearly seventy delegates were found to be in attendance, the largest meeting the Grange has enjoyed for a number of years. The sessions were private and business transacted purely within the direct interest of the order itself, though of such nature as to be of worth and influence outside its members when it assumes working order and material form, for a new impetus has been given Grange business in the State, and in many fields of useful activity it is again becoming a decided factor.

The meeting in the College chapel Tuesday evening was public and was enjoyed by a good-sized and deeply interested audience. Mr. Sam Kimble, of Manhattan, gave the address of welcome for the city in his own happy and individual style. The courtesy of the College and its kindly word of good fellowship and greeting was extended the visitors by Prof. J. D. Walters, in the absence of President Nichols.

Professor Walters said in part: "In the absence of the President it becomes my pleasant duty to extend the welcome of the Kansas State Agricultural College. Professors, officers and students of the College should not be strangers to you, as many of your order are graduates of the institution or have been students here. The school is yours; it was organized and maintained for you and your children. Its future depends largely upon your views of the higher education for the agricultural classes. The College owes much to the Grange for assistance in dark days of the past and hopes to feel the presence of its guiding hand in the future. I again welcome you to the institution. Visit our classrooms, the shops and the barn. Every door is open to you."

For the Grange, A. P. Reardon, of McLouth, responded, thanking both College and city for their generous hospitality and expressing the delight of the order for Manhattan as a convention city. W. R. Goit, of Kansas City, gave the chief address of the evening on "Culverts and Drainage." Professor McFarland's paper on "Objects of the Grange" was full of interesting facts and figures and was well received. Seven members of the Faculty are members of the Grange, including Pres. E. R. Nichols.

The following officers were elected: Worthy Master, E. W. Westgate; Overseer, J. C. Lovett, of Miami county; State Lecturer, A. P. Reardon, of Jefferson county; Secretary, Geo. Black, of Olathe; Treasurer, Wm. Henry, of Olathe.

The Grange expressed its interest in the Agricultural College by the adoption of the following resolutions:

Resolved, That the legislative committee be instructed to use their utmost endeavors to secure an appropriation for the Kansas State Agricultural College sufficient to enable the College to properly accommodate and instruct the large number of our boys and girls who wish to attend that institution."

FARMERS' INSTITUTES.

The Agricultural College is not only a high-grade scientific and practical school for young men and young women; it is also a missionary institute for progressive methods of farming among the present generation of practical farmers. The work of the Experiment Station has reached a magnitude and importance which no one would have dared to predict a quarter of a century ago. The same can be said of the farmers' institutes which are being held annually in almost every county of the State. During the past six months the College assisted in one hundred thirty-nine institutes, and arrangements have been made to increase this work next year. Applications are being received at the Executive office every day. The farmers' institute is becoming popular all over the State, not only for the fall and winter season, but for the spring and summer as well.

The following table shows the extraordinary growth of this College extension work during the last dozen years:

YEAR.	INSTITUTES.	YEAR.	INSTITUTES.
1888-89.....	10	1894-95.....	22
1889-90.....	8	1895-96.....	22
1890-91.....	11	1896-97.....	19
1891-92.....	11	1897-98.....	30
1892-93.....	11	1898-99.....	63
1893-94.....	17	1899-00.....	136

Previous to 1888-89 the number of institutes was less than ten per year, so that during the fifteen years previous to and ending June 30, 1895, a total of only one hundred thirty-seven institutes had been held, which is only one more than were held during last year.

From June 28 to November 30 of the present year, members of College force have held one hundred twenty-nine farmers' institutes. The total attendance has been 59,285. Arrangements have been made for holding twenty-two institutes in December, and several more in January and February.

THE INDUSTRIALIST.

*Published weekly during the College year by the
Printing Department of the*

KANSAS STATE AGRICULTURAL COLLEGE.

Manhattan, Kansas.

★ ★ ★
PRES. E. R. NICHOLS.....Editor-in-Chief
PROF. J. D. WALTERS.....Local Editor
PROF. J. T. WILLARD.....Alumni Editor

BOARD OF REGENTS.

HON. E. T. FAIRCHILD, President.... Ellsworth
HON. J. S. MCDOWELL, Vice-President,
Smith Center
HON. W. T. YOE, Treasurer..... Independence
HON. WM. HUNTER, Loan Comm'r, Blue Rapids
HON. MRS. SUSAN J. ST. JOHN..... Olathe
HON. CARL VROOMAN..... Parsons
HON. J. M. SATTERTHWAITE..... Douglass

PRES. E. R. NICHOLS, Sec. *ex-officio*.

LOCAL NOTES.

The carpenter shop is turning out three hundred specimen boxes for the Entomological Department.

The fourth-year engineers have been busily engaged in making a complete test of the high-pressure boilers.

The *Manhattan Nationalist* publishes an epitome of Professor McFarland's address before the State Grange.

The apprentices in the boiler and engine room have rewired the printing-office and installed a number of larger lamps.

Many of the students assigned to carpenter work are putting in extra time finishing private work for Christmas presents.

The illustrations in this issue of the *INDUSTRIALIST* were designed by President Nichols and ornamented by Professor Walters.

Pres. E. R. Nichols will deliver an address before the State Teachers' Association on "Some Phases of Common School Work."

Postmaster John H. Winne, of Manhattan, reports that we will soon have free mail delivery in this city—as soon as the buildings can be labeled and numbered.

The seniors and juniors met in their annual football contest on the campus Tuesday afternoon. The game was hotly contested, neither side being able to score.

Commencement exercises of the city schools were held at the opera-house, Friday, December 21. There were thirty four graduates—seven boys and twenty-seven girls.

The Farm Department is testing four different makes of tank heaters. Last winter it required one-half pound of coal a day per steer in the tank heaters used in the College feed lots.

The "Kook Book" by the College Y. W. C. A. contains photo-engravings of Mrs. Nellie Kedzie and Miss Minnie Stoner, the former and the present professors of Domestic Science.

The students in the Agricultural Mechanics class are repairing a separator for the Farm Department. A great variety of farm machinery has been overhauled and rebuilt by this class, who have thus obtained a most valuable training.

The class book of '00 has finally been completed and delivered. It is an interesting broad quarto of realism and fiction concerning the College doings and experience of the class. Price, two dollars.

A large picture of the Main building at the College will ornament the flour sacks used by the Manhattan Milling Company. This will no doubt prove a splendid advertisement for the mills.

State Auditor Cole was here on Thursday to look over the College. President Nichols escorted him through the different departments. The College is always glad to receive visits from State officers.

Two wings of the Dewey dormitory are nearly completed and will be ready for the winter term of College. This will be the most modern, largest and best equipped dormitory in the State and will make school life at the Agricultural College almost like home.—*Mercury*.

The Alpha Beta Literary Society gave its annual last Saturday in the College chapel. The house was crowded, the decorations original and tasty, and the program up to the usual high standard of the society. Many old members from all parts of the State were present.

Professors Walters and Stoner report an enthusiastic and well-attended two-days' farmers' institute at Hutchinson last week. The lecture by Miss Stoner, on "Domestic Science Teaching in the Kansas State Agricultural College," was listened to by the girls of the high school.

The following is a list of the enrolment of students for the present fall term: Postgraduates 16, seniors 63, juniors 80, sophomores 153, freshmen 330, preparatory students 181, apprentices 51, special students 6, short-course students in Domestic Science 47. The total enrolment in all courses is 927.

Chas. S. Davis, formerly superintendent of printing at the Kansas Agricultural College, has become identified with the Indian school at Chilocco, Okla. He has put in a small printing-office, and in connection with his other duties finds time to issue a small publication which he calls the Chilocco *Beacon*. The little paper makes a specialty of news of the various Indian schools and will prove a valuable adjunct to these institutions and should become a source of profit to its publisher.

For three days, beginning December 20, the Missouri State Dairy Association will meet in annual session in Kansas City, and it is expected that about 1200 delegates will be in attendance. Besides there will be representatives of all the large dairy machinery establishments, and many Eastern buyers will also be there. The delegates will be entertained at the theaters and other places of amusement, and it is proposed to give a cowboy's minstrel show (home talent) for the especial benefit of the guests from the East.

The Chemical, Farm and Veterinary Departments are feeding thirty spring calves in an experiment to test the value of condimental stock foods in fattening animals. One of the most widely sold stock foods in the State is being fed. The first six weeks of this experiment are completed and the calves not fed the stock food have gained twenty per cent more than those that have had it.

The Manhattan Horticultural Society met December 13. The following officers were elected for the ensuing year: President, A. Dickens; first vice-president, A. J. Nicholson; second vice-president, J. B. Haney; treasurer, T. C. Wells; secretary, W. J. Grifing. The following delegates were elected to attend the State horticultural meeting, December 27, 28, 29: Delegates, J. B. Haney, Wm. Baxter; alternates, F. A. Marlatt, Mrs. A. Dickens. The treasurer's report showed the amount in the treasury to be \$1.50.

The committee on assignments have worked hard during the past two weeks assigning students for the coming winter term. It is no easy matter to assign over nine hundred students, many of them irregular in their work, and to arrange for equal classes and equal work in the different departments. A large number of special requests have to be decided by the whole committee and hours are often consumed to look up the past records of such students. The committee consists of Professors Willard, Hitchcock, Walters and Popenoe and Instructors Harper, Howell and Rice.

Assistant J. G. Haney, of the Farm Department, is in trouble about his identity. Two weeks ago the *Texas Stockman* clipped one of his articles on "Feeding Beef Cattle" and proudly assigned it to Prof. J. G. Haney, of the Texas Experiment Station. Last week the *Wakefield Advertiser* speaks of "Prof. J. G. Haney and his wife" as being present at the Wakefield farmers' institute. The prospects are that he will some day be professor of agriculture at some first-class educational institution and that he will be married to a handsome woman, but he protests that the above statements are a little too previous.

The following papers by College parties are mentioned in the preliminary program of the Kansas Academy of Science: "Additions to the List of Kansas Cleoptera During 1899-'00," by Warren Knaus; "List of Plants in My Florida Herbarium," by Prof. A. S. Hitchcock; "The Relative Rate of Digestion of Raw Vegetable Proteids and of Cooked," by Prof. J. T. Willard and Miss Maud Gardiner; "List of Plants Collected in Lee county, Florida," by Prof. A. S. Hitchcock; "Soil Exhaustion by Continuous Cropping of Wheat," by Prof. J. T. Willard; "Collection of Notes on Kansas Cleoptera," by Warren Knaus; "Effect of Oxygen on Animal Life," by Prof. J. T. Willard and Mr. Kinsley.

Immense crowds were present at the judging of the various classes of blooded animals on exhibition at the international live stock exposition at Dexter Park Pavillion, Chicago, last week. The exhibitions of the agricultural colleges of Wisconsin, Michi-

gan, Minnesota and Iowa are regarded as one of the most important features of the exposition, and the animals bred and raised by the students of those institutions, about a hundred in number, were examined with great interest by stock raisers. In a number of classes so far judged they have received first, second and third prizes. Exhibits of cattle are made by Michigan and Wisconsin, and numerous breeds of sheep and swine are shown by all four colleges. The Kansas State Agricultural College is not provided with blooded stock, as yet, and could not get a blue ribbon at a second-rate county fair, as far as high-bred animals are concerned.

It may be welcome news to many students that the Board of Regents have authorized the Faculty to provide for work in the science and history of education, as electives in the General Science course. In compliance with this wish of the Board, arrangements have been completed for a term's work in history of education for next winter, and in science of education for next spring. Both classes will be taught by Professor McKeever, who has taught these subjects in several teachers' institutes and has made them a special subject of investigation for many years. This move will enable students who contemplate work in teaching to secure State diplomas without attending other educational institutions. The Agricultural College is constantly being asked to furnish special teachers in technical and scientific branches, and it is highly desirable that in addition to the work in these subjects which the students are doing here, those who desire it should be given an opportunity to perfect themselves in the philosophy of pedagogics.

George F. Thompson, formerly the Superintendent of the Printing Department of this College, who is editor of the bureau of animal industry, has completed one of the most difficult documents ever issued by the government. It is an index of the publications of the bureau and contains seven hundred pages. Its compilation required diligent and accurate research of various subjects contained in thousands of documents printed from 1837 to 1898, inclusive. Mr. Thompson compiled three other indices of a similar kind in the past few years and is considered the most expert in government service in this line of work. He has just completed a congressional document for the bureau on the subject of the Angora goat industry of the United States, which is now in course of issue. This edition will contain about one hundred pages, including many elegant half-tone illustrations. It will be eagerly sought for, as the raising of Angora goats throughout the country has become an important adjunct to the farm, and is attracting much investment.

After corresponding with a number of suitable veterinarians, the Board of Regents have elected Dr. Tait Butler, of Cudahy, Wis., to fill the chair of veterinary science, made vacant by the resignation of Dr. Paul Fischer. Doctor Butler is a veterinarian of considerable practical experience. He studied two years in St.

Mary's College, Canada, two years in the Ontario Veterinary College, Canada, and took a term of lectures in the medical college of the State University of Iowa. From 1885-'91 he practiced in several cities; from 1891-'96 he was professor of veterinary science and human anatomy in the State Agricultural College of Mississippi; from 1896-'99 he was editor of the *Southern Farm Gazette*, and last year he was sanitary inspector in the U. S. Bureau of Animal Industry. The Doctor is the president of the American Veterinary Medical Association. He is thirty-eight years old and married. The position which he will fill is a difficult one in many respects. By law the professor of veterinary science at this College is also the veterinary expert of the State and has to give a good deal of his time to investigations of diseases of farm animals, wherever he may be required.

The second-year students of the short-course class in Domestic Science have been receiving excellent drill in the preparation and serving of standard menus. After a complete course of lectures on table setting and serving had been given the class was divided into groups as follows: Housekeepers, cooks, waiters, and guests. The entire menu is prepared and served in and by the class under the direction of Professor Stoner and the short-course assistant, the greatest care being taken to correct any mistakes or offer helpful suggestions. The advantage of such a training in the practical work of serving and being served is obvious. You may know perfectly *how* a thing is done but until one has had actual experience one has not that self-confidence which begets ease and grace, both of which are so essential to either guest or hostess. Then, too, the choosing of the guests from among the class rather than outsiders has its advantage, since it gives both the directors and students more freedom for the asking of questions and the bringing out of the more delicate points to be observed, especially by the hostess and waiters. Dinner, breakfast, luncheon and tea menus have been served thus, and by the transferring of the girls in the different groups each one gets the entire course of training. In addition to this they are receiving a course of instruction in the use of the chafing-dish. The term's work closed with a series of lectures on the care of the sick.

Coming State Events.

State Horticultural Society, Topeka, December 27-28; W. H. Barnes, secretary, Topeka.

State Teachers' Association, Topeka, December 27-28; E. T. Fairchild, president, Ellsworth.

State Academy of Science, Topeka, December 28; D. E. Lantz, secretary, Alma.

State Improved Stock Breeders' Association, Topeka, January 7-9; H. A. Heath, secretary, Topeka.

State Historical Society, Topeka, January 15; George Martin, secretary, Topeka.

Resolutions.

Since, to our great sorrow, death has removed from the Faculty of the Kansas State Agricultural College. Miss Florence Ball, we deem it meet to record, briefly, our estimate of her worth and character, and to express to her loved ones the very high regard in which we held her.

Although she was stricken suddenly, and was called from us in the bloom of her youth and strength, and though her term of service in the institution has been brief, yet to us all she was known as a prompt, faithful and efficient instructor—one who won without effort the highest esteem of her pupils and the utmost confidence of her associates.

Active in both social and religious life, she exhibited a rare tact and a peculiar charm of manner. She was extremely quiet and unassuming, yet so buoyant and wholesome, and of such an amiable disposition as to elicit the most genuine attachment from all who came into close association with her. She possessed a noble, generous and finely poised character, and, though very young and fond of life, she did not shrink from death. Her memory will long linger in the institution as a rich heritage, and no one who knew her will fail to feel throughout life the noble influence of her character.

FRANK C. LOCKWOOD,

HARRIET HOWELL,

GEO. F. WEIDA,

Committee from the Faculty.

ALUMNI AND FORMER STUDENTS.

A. I. Bain, '00, took a few days' vacation from the farm to revisit the scenes of his recent College experiences. We are always pleased to see our graduates.

May Willard Emrick, '95, has been spending several months visiting with the home folks and returned to Portland, Ore., last week where her husband, Victor Emrick, '95, is employed in the offices of the Oregon Short Line Railway Company.

Lydia G. Willard, fourth-year student in 1884, started for Sanibel island, Florida, last Wednesday, to spend the winter with her brother, E. A. Gardiner. She takes her son with her, and leaves her husband, the editor, to the tender mercies of others.

W. H. Roberts, '99, and Myra Shannon, special student in 1899, are to be married Christmas day at the home of the bride, Vernon, Kan. They will be at home after January 7, in Perry Okla., where Mr. Roberts is principal of the city schools.

M. G. Spalding, '96, was one of the out-of-town visitors who returned to attend the Alpha Beta annual exhibition. He is teaching in the Eureka schools and finds use for his knowledge of the sciences. He has recovered in large measure from the severe injury to the skull which he received some months since.

J. E. Payne, '87, and Mary Cottrell Payne, '91, are rejoicing in the birth of twin daughters. Unless the editor is mistaken, this is the first pair of twins among the children of the alumni, and they will be special objects of interest at future reunions.

While on a trip to Matfield Green, Messrs. Haney, '99, and Dickens, '93, found E. J. Fairhurst, student in 1881-82, Santa Fe station agent at Cottonwood Falls. He credited K. S. A. C. with his start in life, having learned telegraphy under Secretary Graham. They also found Henry Rogler, '98, prospering with alfalfa, corn, cattle, and hogs, his heavy crops, and with politics for recreation.

S. C. Mason, '90, professor of horticulture and biology in Berea College, and formerly professor of horticulture here, has been appointed one of twelve foresters of the United States, and has been spending a week in Washington in consultation concerning the work. Professor Mason's long attention to the subject of forestry with his well-recognized energy and ability insure a successful administration of his new duties.

Among the most pleasant features of attendance upon farmers' institutes is the opportunity that it affords for renewal of acquaintance with former students or graduates. Doubtless hundreds have been met thus within the last six months. No effort has been made to notice all of these, interesting as it would have been. At the Wakefield institute J. T. Willard, '83, and J. G. Haney, '99, met Anna Streeter, '99, H. W. Avery, '91, and Messrs. Warner and Cowell, former students.

Prof. M. A. Carleton ['87] (a formerly-of-Kansas boy, by the way), cerealist in the United States Department of Agriculture, writes from Washington to Secretary Coburn, of the Kansas State Board of Agriculture, expressing great interest in the wheat industry of the State, and thinks her people will make a great mistake if they fail to improve the present opportunities of exploiting and advertising her great possibilities as the most extensive producer of the highest class of wheat known to the milling fraternity. He thinks highly of the movement for Kansas' importing a cargo of seed from Russia in time for next year's sowing, and very properly suggests that all who are interested in the movement, or are likely to want some of the imported seed, should early communicate with the chairman of the committee having the matter in hand, Mr. B. Warkentin, of Newton, Kan. Mr. Carleton states the interesting fact that he has just recently returned from a trip through Russia, where he secured quite a number of the best hard winter wheats in South Russia, and "expects during the coming year that the Agricultural Department will be able to distribute some very fine varieties to various portions of the states of the plains."—*Kansas Farmer*.

BOARD OF INSTRUCTION.

ERNEST R. NICHOLS, A. M. (University of Iowa), President.....	631 Poyntz avenue
JOHN D. WALTERS, M. S. (Kansas State Agricultural College).....	North end of Sixth street
ALEXANDER B. BROWN, (Boston Music School), A. M. (Olivet).....	817 Houston street
JULIUS T. WILLARD, M. S. (Kansas State Agricultural College).....	1211 Moro street
ALBERT S. HITCHCOCK, M. S. (Iowa Agricultural College).....	College Hill, 2 miles N. W. of College
FREDERIC A. METCALF, O. M. Superioris Honoris (Emerson Coll. Oratory).....	6th and Poyntz ave.
GEORGE F. WEIDA, Ph. D. (Johns Hopkins).....	517 Fremont street
HENRY M. COTTRELL, M. S. (Kansas State Agricultural College).....	College Campus
MISS MINNIE AYA NELLIE STONER, (Boston N. S. of H. A.), B. S. (S. D. A. C.).....	Fourth and Osage
JOSEPH D. HARPER, M. S. (Rose Polytechnic Institute).....	Houston st., between 6th. and 7th. streets
EDWIN A. POPENOE, A. M. (Washburn).....	Seventh and Osage streets
FRANK C. LOCKWOOD, Ph. D. (Northwestern).....	Corner Fifth and Humboldt
BENJ. L. REMICK, Ph. M. (Cornell College).....	Fourth and Osage
BENJ. F. EYER.....	512 Houston street
O. E. GOODELL, A. M. (Franklin).....	626 Houston street
SEPTIMUS Sisson, S. B. (Chicago), V. S. (Toronto).....	Cor. Manhattan avenue and Moro
TAIT BUTLER, V. S. (Toronto).....	Professor of Zoölogy.
MISS HARRIET HOWELL, (Pratt Institute).....	Corner Poyntz and Juliette avenues
JOSHUA D. RICKMAN, I. T. U.....	911 Osage street
MISS JOSEPHINE T. BERRY, A. B. (Kansas University).....	Sixth street and Poyntz avenue
R. S. McFARLAND, A. M. (Miami).....	Fourth and Osage
.....	Principal Preparatory Department.
.....	Director of Physical Training.
MISS LORENA E. CLEMONS, B. S. (K. S. A. C.), Secretary.....	Corner Fourth and Laramie
A. H. OTIS, M. S. (Kansas State Agricultural College).....	College Hill
WILLIAM ARCH MCKEEVER, A. M. (Kansas University).....	621 Houston street
Mrs JOSEPHINE C. HARPER, Instructor in Mathematics.....	Corner Sixth and Pierre streets
Miss ALICE RUPP, (Indiana State Normal), Instructor in English.....	620 Houston street
CHARLES EASTMAN, Cadet Major and Acting Commandant.....	611 Poyntz avenue
William L. House, Foreman of Carpenter Shop.....	Corner Sixth and Colorado
Chas. W. Pape, M. S. (K. S. A. C.), Ass't in Zoölogy and Ass't Curator Museum.....	918 Osage st
R. W. Clothier, M. S. (K. S. A. C.), Assistant in Chemistry.....	Fremont, between Fifth and Sixth
Margaret J. Minis, Assistant Librarian.....	Fourth and Moro streets
R. H. Brown, M. T. (Kan. Con. of Music), B. S. (K. S. A. C.), Ass't in Music.....	817 Houston street
J. M. Westgate, M. S. (K. S. A. C.), Assistant in Botany.....	Cor. Manhattan avenue and Vattier
May Secrest, B. S. (K. S. A. C.), Assistant in Domestic Art.....	Cor. Leavenworth and Seventh
Wm. Anderson, B. S. (K. S. A. C.), Assistant in Mathematics.....	Cor. Humboldt and Juliette ave
Gertrude Barnes, Assistant Librarian.....	Cor. 9th and Moro
Albert Dickens, B. S. (K. S. A. C.), Assistant in Horticulture.....	Fremont and Manhattan av: nue
William Baxter, Foreman of Greenhouses.....	.....
J. G. Haney, B. S. (K. S. A. C.), Ass't in Feeding and Field Experiments.....	Manhattan ave and Kearney
Mary Pritner, B. S. (K. S. A. C.), Assistant in Domestic Science.....	Cor. 7th and Leavenworth
Theodore Lindquist, M. S. (Northwestern), Ass't Physics.....	Cor. Fifth and Humboldt
W. M. Sawdon, B. S. (Purdue), Assistant in Mechanics.....	Juliette and Houston
O. I. Purdy, B. S. (K. S. A. C.), Assistant in Printing.....	1216 Fremont street
Ada Rice, B. S. (K. S. A. C.), Assistant in Preparatory Department.....	Osage and 8th. street
Louis Wabnitz, Foreman Iron Shops.....	5th and Osage
Henry Van Leeuwen, (Univ. Wis. D. S.) Inst'r in Cheese Making.....	Manhattan and Kearney
E. W. Curtis, (Univ. Wis. D. S.) Instructor in Butter Making.....	.....
Florence L. Grant (Mass. Normal Art School), Assistant in Drawing.....	Fourth and Osage
A. T. Kinsley, B. S. (K. S. A. C.), Assistant Veterinary Department.....	Tenth and Kearney sts
Elizabeth Agnew, B. S. (K. S. A. C.), Assistant in Domestic Science.....	Ninth and Moro streets
Jacob Lund, M. S. (K. S. A. C.), Engineer.....	Cor. Tenth and Kearney
C. Jeanette Perry, R. S. (K. S. A. C.), Executive Clerk.....	Corner Colorado and Fifth
Alice Melton, B. S. (K. S. A. C.), Clerk in Director's office.....	.....
W. R. Lewis, Janitor.....	N. E. corner Main College Building
Archie Huycke, Secretary to President.....	Manhattan avenue and Kearney

KANSAS STATE AGRICULTURAL COLLEGE

FIVE COURSES OF STUDY.....

Each complete in itself and leading to the degree of Bachelor of Science, are as follows:

- 1—General Science
- 2—Agriculture
- 3—Domestic Science
- 4—Mechanical Engineering
- 5—Electrical Engineering

This Institution

is supported by the General Government and by the State of Kansas, and is designed, by its instruction, to promote the liberal and practical education of the industrial classes in the several pursuits of life.



COLLEGE classes are open to both sexes. Tuition is free in all departments. There is no charge for laboratory supplies. Room and board can be had at very reasonable rates. The yearly expenses, exclusive of clothes and traveling expenses, are between \$100 and \$200. All College laboratories, shops and class rooms are well supplied with needful apparatus and appliances. Practical application is made of the principles learned in the study of the sciences, and thus the College is made a school of applied science.

Domestic Science.

A full course in Domestic Science now in successful operation. The work in the Department of Domestic Science forms an interesting part of the instruction given in the women's course. It is of great practical and disciplinary value.

FOUR SHORT COURSES

Open to students of mature age who cannot, on account of time or money, take one of the four-year courses.

- 1—Apprentice
- 2—Domestic Science
- 3—Dairying
- 4—Agricultural

For catalogue or other information, address

ERNEST R. NICHOLS, A. M., PRES.,
MANHATTAN, KANSAS.

Volume 27.

Number 13.

THE INDUSTRIALIST

ISSUED WEEKLY

KANSAS STATE
AGRICULTURAL COLLEGE

☆ ☆ ☆

Editor-in-Chief,

Pres. E. R. Nichols

Local Editor,

Prof. J. D. Walters

Alumni and Former Students, *Prof. J. T. Willard*

☆ ☆ ☆

Published by
PRINTING DEPARTMENT
J. D. Rickman, Supt.

Entered at post-office, Man-
hattan, Kan., as second-class
matter. Act of July 16, 1894.

BOARD OF INSTRUCTION.

ERNEST R. NICHOLS, A. M. (University of Iowa), President.....	631 Poyntz avenue
JOHN D. WALTERS, M. S. (Kansas State Agricultural College).....	North end of Sixth street
Professor of Industrial Art and Designing.	
ALEXANDER B. BROWN, (Boston Music School), A. M. (Olivet).....	817 Houston street
Professor of Music.	
JULIUS T. WILLARD, M. S. (Kansas State Agricultural College).....	1211 Moro street
Professor of Applied Chemistry.	
ALBERT S. HITCHCOCK, M. S. (Iowa Agricultural College).....	College Hill, 2 miles N. W. of College
Professor of Botany.	
FREDRIC A. METCALF, O. M. Superioris Honoris (Emerson Coll. Oratory) 730 Poyntz avenue	
Professor of Oratory.	
GEORGE F. WEIDA, Ph. D. (Johns Hopkins).....	517 Fremont street
Professor of Pure Chemistry.	
HENRY M. COTTRELL, M. S. (Kansas State Agricultural College).....	College Campus
Professor of Agriculture, Superintendent of Farm.	
MISS MINNIE AVA NELLIE STONER, (Boston N. S. of H. A.), B. S. (S. D. A. C.) 5 S Juliette ave	
Professor of Domestic Science, Dean of Women's Department.	
JOSEPH D. HARPER, M. S. (Rose Polytechnic Institute) Houston st., between 6th. and 7th. streets	
Professor of Mechanical Engineering, Superintendent of Shops.	
EDWIN A. POPENOE, A. M. (Washburn).....	Seventh and Osage streets
Professor of Horticulture and Entomology, Superintendent of Orchards and Gardens.	
FRANK C. LOCKWOOD, Ph D (Northwestern).....	Fourth and Osage
Professor of English.	
BENJ. L. REMICK, Ph. M. (Cornell College).....	Fourth and Osage
Professor of Mathematics.	
BENJ. F. EYER	512 Houston street
Professor of Physics and Electrical Engineering.	
C. E. GOODRELL, A. M. (Franklin).....	626 Houston street
Professor of History and Economics.	
SEPTIMUS Sisson, S. B. (Chicago), V. S. (Toronto).....	Cor. Manhattan avenue and Moro
Professor of Zoology.	
TAIT BUTLER, V. S. (Toronto).....	—
Professor of Veterinary Science.	
MISS HARRIET HOWELL, (Pratt Institute).....	5 S. Juliette avenue
Superintendent of Domestic Art.	
JOSHUA D. RICKMAN, I. T. U.	911 Osage street
Superintendent of Printing.	
MISS JOSEPHINE T. BERRY, A. B. (Kansas University).....	801 Poyntz avenue
Librarian.	
B. S. MCFARLAND, A. M. (Miami).....	Fourth and Osage
Principal Preparatory Department.	
Director of Physical Training.	
MISS LORENA E. CLEMONS, B. S. (K. S. A. C.), Secretary.....	Corner Fourth and Laramie
D. H. OTIS, M. S. (Kansas State Agricultural College).....	College Hill
Assistant Professor of Dairying.	
WILLIAM ARCH MCKEEVER, A. M. (Kansas University).....	621 Houston street
Assistant Professor of English and Philosophy.	
MISS JOSEPHINE C. HARPER, Instructor in Mathematics.....	Corner Sixth and Pierre streets
MISS ALICE RUPP, (Indiana State Normal), Instructor in English.....	620 Houston street
CHARLES EASTMAN, Cadet Major and Acting Commandant.....	611 Poyntz avenue
William L. House, Foreman of Carpenter Shop.....	Corner Sixth and Colorado
Chas. W. Pape, M. S. (K. S. A. C.), Ass't in Zoology and Ass't Curator Museum.....	918 Osage st
R. W. Clothier, M. S. (K. S. A. C.), Assistant in Chemistry.....	Fremont, between Fifth and Sixth
Margaret J. Minis, Assistant Librarian.....	Fourth and Moro streets
R. H. Brown, M. T. (Kan. Con. of Music), B. S. (K. S. A. C.), Ass't in Music.....	817 Houston street
J. M. Westgate, M. S. (K. S. A. C.), Assistant in Botany.....	Cor. Manhattan avenue and Vattier
May Secrest, B. S. (K. S. A. C.), Assistant in Domestic Art.....	Cor. Leavenworth and Seventh
Wm. Anderson, B. S. (K. S. A. C.), Assistant in Mathematics.....	Cor. Humboldt and Juliette ave
Gertrude Barnes, Assistant Librarian.....	Cor. 9th and Moro
Albert Dickens, B. S. (K. S. A. C.), Assistant in Horticulture.....	Fremont and Manhattan avenue
William Baxter, Foreman of Greenhouses.....	—
J. G. Haney, B. S. (K. S. A. C.), Ass't in Feeding and Field Experiments.....	Manhattan ave and Kearney
Mary Pritner, B. S. (K. S. A. C.), Assistant in Domestic Science.....	Cor. 7th and Leavenworth
Theodore Lindquist, M. S. (Northwestern), Ass't Physics.....	Cor. Fifth and Humboldt
W. M. Sawdon, B. S. (Purdue), Assistant in Mechanics.....	Juliette and Houston
O. I. Purdy, B. S. (K. S. A. C.), Assistant in Printing.....	1216 Fremont street
Ada Rice, B. S. (K. S. A. C.), Assistant in Preparatory Department.....	Osage and 8th. street
Louis Wabnitz, Foreman Iron Shops.....	5th and Osage
Henry Van Leeuwen, (Univ. Wis. D. S.) Inst'r in Cheese Making.....	Manhattan and Kearney
E. W. Curtis, (Univ. Wis. D. S.) Instructor in Butter Making.....	—
Florence L. Grant (Mass. Normal Art School), Assistant in Drawing.....	Fourth and Osage
A. T. Kinsley, B. S. (K. S. A. C.), Assistant Veterinary Department.....	Tenth and Kearney sts
Elizabeth Agnew, B. S. (K. S. A. C.), Assistant in Domestic Science.....	Ninth and Moro streets
Jacob Lund, M. S. (K. S. A. C.), Engineer.....	—
C. Jeanette Perry, B. S. (K. S. A. C.), Executive Clerk.....	Cor. Tenth and Kearney
Alice Melton, B. S. (K. S. A. C.), Clerk in Director's office.....	Corner Colorado and Fifth
W. R. Lewis, Janitor	—
Archie Huycke, Secretary to President.....	N. E. corner Main College Building
	Manhattan avenue and Kearney

THE INDUSTRIALIST.

VOL. 27.

MANHATTAN, KAN., JANUARY 8, 1901.

No. 13

HABIT IN EDUCATION.

(Written especially for students.)

VERY few persons appreciate the importance of well-directed habit formation in the acquisition of mental culture. Still fewer are fully aware of their self-directing powers in that direction. Not until the study of psychology is reached does the student receive any definite instruction on the subject of habit, and that comes late in the course. Moreover, a large percentage of the students never take up the study of psychology.

Habit may be defined as a tendency of the mind or the body to repeat without conscious direction any act persistently practiced for a number of times. Thus, walking is a habit, for it is done automatically. The same is true of the utterance of words in speech, for one does not consciously direct the movements of the organs. If one will investigate the matter, he will find that he has many mental habits that are just as automatic. In this article I shall try, first, to set forth some of the evil habits that tend to interfere with habits of studiousness; and, second, to give some simple methods by which better habits may be acquired. I trust that the suggestions may be helpful to some who are not students.

There are many who do not have any regular order or routine of work for the day, but who depend upon impulse or "mood" to direct their actions. The visiting mood is pretty sure to take possession of them at a time when some more industrious neighbor is diligently at work; and, as a result, the good neighbor has to suffer for it. Then, there is a second class who, while attempting to study, will sit and stare into vacancy much of the time, or whistle or drum heavily with the fingers. There is yet a third class who, seemingly industrious, busy themselves with much planning and re-arranging of the work; with piling up heaps of books and other apparatus around them, and with making many hasty attacks and retreats.

The preceding evil practices are not necessarily attributable to

either mental obtuseness or wanton shiftlessness. Nearly all students honestly desire to be diligent. Let those who are interested try the following plan: Arrange a program of the day's work, assigning a certain hour for every task and making due allowance for rest, meals and recreation, and hang it up in a conspicuous place in your room. It may be difficult at first, but compel yourself to follow this program to the letter. At the end of a week it will be much easier, at the end of a month it will have become almost a fixed habit and will need but little attention. If you fail in any particular, bring all the possible force of your will to bear on the weak point and it will soon be strengthened. Several good results are almost sure to follow: (1) Increased strength of will-power, (2) a saving of much time, (3) much greater efficiency of work. You will find, too, that your mind will be especially prepared for each subject when it comes up. If your program calls for algebra at 4 o'clock, your mental activity at that time will be keenest along that particular line; and so with other tasks when their time comes.

A few "ifs." If your mind wanders, bring it back to the point of application as soon as the fault is discovered. If that visitor referred to above comes, give him such treatment as to make him ill at ease and he will soon leave. If you are nervous or fidgety at your work, stop for a few moments and sit with closed eyes, causing your mind to come to a reposeful attitude.

And then, in making up the bundle of habits that form his character, let the student cultivate industriously two elements, viz., (1) a healthful optimism, and (2) a positive way of doing things. As an excellent aid to the growth of both of these elements, let the following statements be cut out and hung up beneath your daily program. Read them over often until they become your sentiments. They are old thoughts, but certain in their good effect if properly used:

1. Keep clean. 2. Don't worry. 3. Don't be in a hurry. 4. Keep a good conscience. 5. Cultivate a love for your work. 6. Think only healthful thoughts. 7. Practice a judicious self-denial. 8. Have regular hours for work, recreation, and sleep. 9. Avoid all silly, trifling remarks as well as vulgar and profane language. 10. Do all the good you can to day. 11. Try to love everybody. 12. Always be hopeful. 13. Never despair. 14. Trust God.

W. A. MCKEEVER.

THE INDUSTRIALIST.

Published weekly during the College year by the
Printing Department of the

KANSAS STATE AGRICULTURAL COLLEGE. Manhattan, Kansas.

☆ ☆ ☆
PRES. E. R. NICHOLS..... Editor-in-Chief
PROF. J. D. WALTERS..... Local Editor
PROF. J. T. WILLARD..... Alumni Editor

BOARD OF REGENTS.

HON. E. T. FAIRCHILD, President.... Ellsworth
HON. J. S. MCDOWELL, Vice-President,
Smith Center
HON. W. T. YOE, Treasurer..... Independence
HON. WM. HUNTER, Loan Comm'r, Blue Rapids
HON. MRS. SUSAN J. ST. JOHN..... Olathe
HON. CARL VROOMAN..... Parsons
HON. J. M. SATTERTHWAITE..... Douglass

PRES. E. R. NICHOLS, Sec. *ex-officio*.

LOCAL NOTES.

Professor Lockwood spent his vacation in Chicago.

Professor Remick visited old friends in Iowa during vacation.

The Department of Industrial Art has organized fourteen different classes this term.

Professor McFarland spent his vacation with his family in Olathe. He has now moved to Manhattan.

The Kansas Academy of Science, at their recent annual meeting, made ex-President George T. Fairchild of this College an honorary member of the Academy.

The pay-roll for December amounted to \$5,630.69. Of this sum the students received \$817.60, the employes \$294.40, the Station force \$712.09, and the Faculty \$3,806.60.

The College post-office has handled several thousand extra letters and Christmas packages during the holidays. Miss Perry has been quite busy between the post-office window and the telephone receiver.

Assistant Chas. Pape and family enjoyed a visit from his mother during the holidays. She had not seen the College since 1887, and was greatly surprised at the many changes and evidences of growth of the institution.

The last *Kansas Farmer* contains a well-written article on the "Needs of Blooded Stock on the Agricultural College Farm." We wish that every member of the State legislature would read it and ask himself a few pertinent questions concerning its evident lesson.

Prof. B. S. McFarland, of the State Agricultural College at Manhattan, is spending the holidays in Olathe with home folks. He will return, accompanied by his wife, to Manhattan Monday. Professor and Mrs. McFarland will be greatly missed from Olathe society.—*Olathe Mirror*.

Among the members of the Faculty who were present at the educational meetings at Topeka during the holidays were: President Nichols, Professors Walters, Willard, Hitchcock, Weida, Pope, Otis, and Harper, and Instructors Howell, Haney, Rice, Dickens, Rickman, Westgate, and Baxter.

Mr. and Mrs. B. W. Ball and family, of Detroit, Mich., wish to express to the many friends and pupils of their beloved daughter Florence, their deepest thanks for the great kindness and sincere sympathy extended to them during their late bereavement; especially for the kind assistance rendered to Mrs. Ball in the midst of her great trial.

The show of the Kansas State Poultry Association will be held at the Auditorium, Topeka, January 7 to 12, 1901. The premium list shows that the management expect the greatest show ever held in the State. All classes of poultry and pet stock will be represented. Incubators, brooders and other appliances will constitute a school of object lessons in the modern art of poultry culture.

Among the many papers and addresses on the program of the Kansas Improved Stock Breeders Association this week we notice one by Prof. H. M. Cottrell, on "Some New Points in Regard to Alfalfa;" one by Assistant J. G. Haney, on "The Year's Work in Feeding at the Experiment Station;" and one by Dr. Tait Butler, on "Pink Eye, Contagious Abortion, and Other Ailments of Live Stock."

The last sale of the Manhattan Live Stock and Sales Company took place last Saturday at their yards. Quite a lot of stock was listed. The management say there has been considerable demand for horses of 1100 pounds and over. Good horses of that class will be in demand. These sales have been money makers for farmers who had only a few head of cattle or a fine bunch of feeders and stockers, as they bring the buyer and seller together.

The Students' Coöperative Association did a fair business during the term just closed. The dining-hall business aggregated \$3,000 and the book store \$900. The dining-hall had one hundred fifteen regular boarders and an average of forty-five extra each day for dinner. To supply the table eight thousand pounds of beef and fifty-three barrels of milk were required. Fifteen students were given regular employment. The association has proven quite a beneficial arrangement for students of limited means.

The Board of Regents have divided the Veterinary Department into two separate departments—one of Veterinary Science and one of Zoölogy and Physiology. The first will be under the direction of Dr. Tait Butler, assisted by instructor A. T. Kinsley, and the second under the direction of Dr. S. Sisson, assisted by instructor C. W. Pape. It is a pity that the available classroom and laboratory space can not be increased likewise. The Chemical Department, with three regular teachers and several assistants, has no rooms at all; the two departments named above have but one classroom, one laboratory, two small offices, and a general-purpose room.

The Kansas State Dairy Association will meet at Topeka, January 7, 8, and 9. The program is rich and interesting. The Agricultural College will be represented by several addresses.

Professor D. H. Otis will read a paper on "Practical System of Feeding for the Western Kansas Farmer;" Assistant E. W. Curtis will discuss "How the Work for the Kansas Dairy School is Beneficial to Kansas;" Assistant H. Van Leeuwen will discuss "Cheese Making in Kansas;" and Pres. E. R. Nichols will address the association on "What Shall the Young Man Study." At the banquet, Wednesday evening, President Nichols will respond to the toast "Our School at Manhattan."

The annual poultry exhibition of Riley county was held in the old *Nationalist* room December 26, 27, and 28. The show was a success in every particular. The number of chickens was not so great as last year, but the quality was noticeably better. The scoring was done by J. J. Atherton, of Emporia. The Belgian hare exhibit was good and some extra fine specimens were shown. There were Belgian, Flemish Black, Belgian Black, Flemish Angora rabbits. The varieties of poultry shown were Barred, White Buff Plymouth Rocks, Silver Buff Wyandotts, Black Langshans, Buff Cochins, Light Bramas, S. C. Brown Leghorns, S. C. White and Buff Leghorns, Black Minorcas, English Red Caps, Silver Spangled Hamburgs, and Rhode Island Reds; Bronze turkeys and Wild Mallard ducks. There was also a very fine Angora cat shown by Major Hope; canary birds by Chaffee and mocking birds by Blachly. The exhibition was visited by many students.

Every department, every classroom, every laboratory, shop and drafting room, every corridor and nook, corner and niche is full of students and more are coming. We can not at this writing give the whole number of students present as the work of organizing classes and assigning the incoming host of young men and young women is constantly going on. On Saturday noon there were assigned about fifty postgraduates, 63 seniors, 83 juniors, 161 second years, 320 first years, 176 preparatory students, 70 dairy-course students, 94 first-term and 16 second-term farmers' short-course students, about half a hundred apprentices, and 8 special students, a total of nearly eleven hundred. Our many readers and patrons should keep in mind that these figures give the actual attendance in the classes of last week—not the combined attendance of the fall and winter term, nor an attendance to be compared with the total attendance for the year. We are sure of an annual total of over thirteen hundred.

Bulletin 99, issued a few weeks since by the Experiment Station, is meeting with a very hearty reception. It consists of Press Bulletins 35 to 70. These press bulletins have been suggested in many cases by numerous letters of inquiry on certain points. In others they embody advance statements concerning experiments in progress. It would be difficult to find a better collection of short articles on agricultural topics. A recent letter states that it is worth its weight in gold to any young farmer. While this may possibly be a slight exaggeration, it is at least well worth asking for, and may be obtained with future bulletins, as well as some of the past, at no greater cost than that of a postal card with

name and address. The press bulletins as issued are not for general distribution, but are sent to all of the papers of the State, and farmers can doubtless secure their appearance in the home paper by sending in a few requests to that effect. The *Wamego Times* has a happy way of printing them in very large, display type, which must necessarily attract attention and invite perusal.

During the holidays Professor Eyer, his advanced class in electricity, and Messrs. Gasser and Fielding went to Topeka to visit the Santa Fe shops, the Edison electrical plant, and to hear an interesting lecture on liquid air. The lecture was given by Professor Woodland in the auditorium of the high-school building. Professor Eyer and class obtained seats near the experiments and were able to observe closely all that took place. There were many experiments, such as freezing mercury, freezing meat so it could be broken in fragments like so much glass, and others illustrating many of the strange properties of this liquid. The most interesting experiment was one in which gas carbon was burned in the vapor while cranberries were being frozen in the liquid, which was contained in an ice cup. The temperature of liquid air is -312° while gas carbon burns at a temperature of 3500° , thus making a difference of 3812° in the two substances so close together. Two and one-half gallons of liquid air were consumed in the experiments. The Santa Fe shops were visited under the guidance of Mr. Leydon, formerly assistant in the shops here.

Farmers' Institutes for the Six Months Ending December 31, 1900.

During the six months ending December 31, 1900, speakers from the College have attended 153 farmers' institutes. The total attendance at these institutes has been 63,000 people, an average of more than 400 per institute. Twenty-seven speakers have been sent out by the College to do this work, and these have attended the number of institutes following their names: Cottrell 49, Otis 47, Haney 43, Clothier 20, Dickens 20, Walters 16, Popenoe 11, Hitchcock 10, Rickman 9, Bainer 9, Agnew 8, Westgate 7, Berry 5, McFarland 4, Stoner 4, Pritner 4, Kinsley 3, Eyer 2, Howell 2, Perry 2, Nichols 1, Willard 1, Baxter 1, Norton 1, Secrest 1, Sawdon 1, Elling 1.

Two of the College force have kept a record of distances traveled. Professor Cottrell has attended 49 institutes, traveling a total of 7648 miles—518 miles by wagon road. Mr. Clothier has attended 20 institutes, traveling a total of 3346 miles—159 miles by wagon road. At this rate it has required 43,400 miles to attend the 153 institutes.

Farmers' institutes have been held in 56 counties and the cost to the College of holding the 153 institutes has been \$2087.35 an average of \$13.64 per institute.

During the summer vacation members of the Faculty presented the work of the College before 18 teachers' institutes, as follows: Walters 9, Boyd 4, Weida 4, and Harper 1.

ALUMNI AND FORMER STUDENTS.

F. E. Uhl, '96, E. B. Patten, '98, and F. D. Waters, '98, are taking the Dairy Course this term.

C. A. Chandler, '00, was a prominent candidate for the office of secretary of the State Horticultural Society at the recent election.

K. C. Davis, '91, after studying a year at Cornell University, is now teaching biology and botany in the Minnesota State Normal school.

Warren Knaus, '82, keeps up his interest in coleoptera and presented two papers at the recent meeting of the Kansas Academy of Science.

Valentine Maelzer, '97, visited the College New Year's day. He has been teaching school in the wilds of Idaho, one hundred fifty miles from a railroad.

At the recent meeting of the State Board of Education, instructor's certificates were granted to Stella Kimball, '94, Ada Rice, '95, and Albert Dickens, '93.

E. S. Sittel, second year in 1898, is visiting relatives and the College. He is employed in the machine-shops of the Choctaw, Oklahoma & Gulf Railway at McAlester, Okla.

J. F. Odle, '94, has sold out his interest in the fine Jersey herd which he and W. C. Moore, '88, have owned near Parsons, and he is now taking a little vacation, visiting the College before engaging in business again.

Schuyler Nichols, '98, spent the holidays visiting his sisters and friends here. He wears with modest pride the gold medal awarded him last year for the best general average in the junior year at the Barnes Medical College.

F. A. Waugh, '91, Marietta Smith, '95, Mabel Cotton-Smith, '96, K. C. Davis, '91, Fannie Waugh-Davis, '91, Jennie Smith-Strong, '94, S. L. Van Blarcom, '91, and Anna Streeter, '99, were out-of-town guests at the Smith-Waugh wedding.

Mrs. F. E. Uhl [Maggie Correll, '97], of Gardner, Kan., arrived last Friday to visit her parents, Mr. and Mrs. J. M. Correll. Mr. Uhl ['96] is expected next Saturday and will remain for the short course in dairying at the College. — *Nationalist*.

Clay E. Coburn, '91, was married December 19, 1900, to Miss Pauline Pittman, of Kansas City, Kan. They will be at home at 422 North Fourth street. The many friends who knew Doctor Coburn as one of our best students and most estimable young men will unite with all the others in wishing for him and his bride a full realization of their most sanguine anticipations. Doctor Coburn is enjoying a very successful practice of medicine in Kansas City, Kan.

Dr. Geo. W. Smith ['93], student in the Chicago Homeopathic College, has been honored with a call to Delevan, Wis., to take care of the practice of one of the leading physicians of that city during the holidays. Mr. Smith is the son of Capt. and Mrs. J. T. Smith. — *Nationalist*.

Howard Rhodes ['96] has been promoted to the position of assistant postmaster of the Manhattan post-office. Mrs. Winne, who has been Mr. Winne's assistant since his appointment, has resigned, her health not permitting of the work. The promotion of Mr. Rhodes is a meritorious one and his many friends will congratulate him upon his advancement. Milton Snodgrass [third year last term] will take the position of mailing clerk formerly filled by Mr. Rhodes. — *Nationalist*.

Just as the clock struck half past eleven, Rev. Fred Clearwaters, of Oakland, Ill., commenced the simple but beautiful ring ceremony which made Miss Mary Waugh, '99, of Manhattan, and Mr. A. C. Smith, '97, of Seattle, Wash., man and wife. About fifty friends and relatives witnessed the ceremony, after which a dainty lunch in two courses was served. The bride was dressed in white mull, wearing pink carnations and carrying the beautiful bride's roses, while the groom wore the usual black. A pleasant diversion was created when, after the lunch was served, the bride threw her roses to the girls present. Miss Martha Nitcher was the favored one, as she caught most of the roses. The newly married couple left on the Rock Island for Topeka, amid a profusion of rice and old shoes. They returned Wednesday evening and left for Seattle Friday afternoon, where Mr. Smith is an electrical engineer. The genial personality of Miss Waugh is much missed in the Farm office, where she was assistant for over a year.

At 4:30 on Christmas day occurred the beautiful but quiet wedding of W. R. Correll and Miss Alta Worley, both of this city, at the home of the bride's parents. As the bride's sister played the wedding march the couple entered the parlor where, in the presence of the members of the two families and a very few invited guests, Rev. W. M. Elledge performed the beautiful and impressive marriage ceremony. The bride was dressed in a beautiful gown of cream-colored silk. After the ceremony an elegant supper was served in three courses at the home of the groom's parents, after which the company spent the evening in social enjoyment and mock charivari. These young people will be greatly missed by their host of friends here, which includes all with whom they have associated. They leave this week for their future home, near Overbrook, Kan. That the sky of their life may have just enough cloudiness to cause a glorious sunset, is the wish of all their friends as the new home is organized. — *Mercury*.

THE RACES OF CORN.

(Press Bulletin No. 75, from Botanical Department.)

Indian corn has been in cultivation by the native races of America for an indefinite period. It probably originated from a wild form somewhere on the Mexican plateau. Botanists usually refer all our forms to one species, *Zea Mays*, with several well-marked subspecies or races.

There are five important races of corn grown in the United States on a commercial scale:

I. Dent corns. A part of the starch in the grain is of a close, hard texture. This is called the horny endosperm and is found along the sides of the kernel, while the softer portion, or starchy endosperm, is found in the center extending to the summit. In drying the center shrinks more than the rest and hence leaves a dent at the apex of the grain. Dent corns are the common field varieties grown in the corn belt and are almost the only kinds exported. There are various colors, white, yellow, and mottled (calico), being the most common. There are also red and blue varieties. Three hundred twenty-three varieties are described.

II. Sweet corns. These are chiefly found in gardens, but it is grown on a commercial scale for canning purposes, and some of the large sorts are grown for fodder. The first variety cultivated was obtained from the Indians, New England, in 1779. In 1854 there were ten varieties. Now there are sixty-three. Corn as a vegetable is practically unknown outside the United States.

III. Flint. The horny endosperm entirely surrounds the starchy, and hence the grain is smooth at maturity. Color various. Many varieties have eight rows and hence are known as eight-rowed corn. Flint corn can be grown much farther north than the dent corn, since it matures earlier, hence it is the prevailing form in Canada and the northern United States. Since it is the common corn of New England it is often called Yankee corn.

IV. Pop-corns. These resemble the flint corns, but differ in the ability to "pop" when heated. This phenomenon depends upon the fact that the starch is in the form of horny endosperm and the moisture present can not easily escape, but finally explodes, turning the grain inside out. Pop-corn seems to be the least modified from the original type. There are twenty-five varieties.

V. Soft corns. In these the starch is all in the form of starchy endosperm. It seems to have been common among the Indians of the Southwest. Some of the blue Squaw-corns belong to this race. Brazilian flour-corn sold by seedsmen is a soft corn. There is no dent in these varieties.

Besides the above there is a pod corn grown as a curiosity, in which each kernel is enclosed in a husk; and some ornamental varieties derived from the flint corn, grown for the striped or barred leaves. The latter are usually sold under the name of *Zea Japonica*.

The varieties of corn are very variable in size, shape, and other qualities. The late Doctor Sturtevant, an authority on corn, said: "The height of the plant in varieties and localities has been reported from eighteen inches for the golden Tom Thumb pop to thirty feet or more for varieties in the West Indies, and single stalks in Tennessee at twenty-two and one-half feet. I have seen ears one inch long in the pop class and six-

teen inches long in the dent class. The rows in varieties may vary from eight to twenty-four or more, and in individual ears are reported from four to forty-eight. A hundred kernels of miniature pop weighed forty-six grains; of Cuzco soft, 1531 grains. A variety that ripens in one month is mentioned from Paraguay, and seven months is said to be required in some southern countries."

The tables show that the average composition of dent corn is, protein 10.3 per cent, fat 5 per cent; flint, protein 10.5 per cent, fat 5 per cent; sweet, protein 11.6 per cent, fat 8.1 per cent. Sweet corn is thus richer in protein and fat, and correspondingly poorer in carbohydrates.

At the Kansas State Agricultural College, experiments are in progress to increase the protein-content of field corn by crossing and selection. Any increase in the protein will greatly extend its usefulness as a feed for stock.

A. S. HITCHCOCK.

HONEYSUCKLES AT THE KANSAS STATION.

(Press Bulletin No. 77, issued by Horticultural and Entomological Department)

Along with other interesting and useful shrubs grown for trial upon the grounds at the Kansas Experiment Station, for some years past the honeysuckles have attracted much attention and proven generally well adapted to the conditions of soil and climate there obtained. The species of this group of plants, though botanically homogeneous, are for ornamental purposes so widely varied as to fit them for several distinct uses in lawn planting. The list of shrubby sorts provides species of dense, rich and persistent foliage, suitable for mass planting in broad effects, as well as those of character so refined as to render them worthy of place as single specimens in choicer situations. Among the twining forms, again, are those admirably suited to cover mounds, walls, or rough terraces, while others, under the care of appreciative growers, are among the most attractive of trellis or pillar plants. They are generally so hardy and so responsive to culture, withal, that they deserve a wider use in Kansas gardens.

The sorts noted in the following commentary are those proving most satisfactory, selected from the more extensive collection under trial.

ERECT SHRUBS.

Lonicera fragrantissima, a Chinese species of spreading habit, the branches curved, with yellowish bark; the leaves numerous, broad oval, thick, rich green, remaining upon the plant until mid-winter, the bushes at this date (December 18) being nearly as green as in summer. The small yellowish flowers appear quite early in spring, before the appearance of the new foliage, and are very fragrant. From its nearly evergreen habit and dense foliage this honeysuckle is a most useful plant for mass-planting in large lawns or in parks. Its only disadvantage is found in a less hardy wood than some of the others. Yet this should not cause its rejection, for its finest effects of foliage are exhibited upon plants that are annually close-pruned, though under this treatment the less ornamental bloom is sacrificed.

Lonicera tatarica. The better known Tartarean or Bush Honeysuckle, of Asiatic origin, is an erect, vigorous shrub, of a neat habit, the branches covered with white bark. The leaves, which appear early in spring and are long retained, are of the softest and clearest color, and the species would well deserve planting for its foliage alone. But in May an added attraction is presented in its abundant bloom, the flowers being conspicuous, graceful

in form, white or pink-red, according to the variety, and pleasantly though not decidedly fragrant. Later the twinned berries appear, coral red or amber yellow, and in such profusion that the bush is little less ornamental at this period than during the season of bloom. The best two varieties are the large-flowered white (*alba*) and the large-flowered red (*grandiflora*), though others are not greatly inferior. This shrub should be one of the first in a list for general planting.

Lonicera Xylosteum, the European fly honeysuckle, a taller, more straggling and less handsome shrub than the last, has yet characters that are sure to attract the observer. The leaves are not large, but are smooth and abundant, and of different shades of green according to their position upon the shoot, this variation giving a most agreeable impression. The flowers are small, yellowish white, fragrant, and produced in great abundance upon the new growth. As in the other species, the amber berries give later beauty to the shrub, in this sort loading the branches until they bend with their burden. As the plant ages it becomes less attractive unless well-distributed new growth is assured by some attention to pruning.

WOODY TWINERS.

Lonicera japonica. This Japanese species is best represented by the useful Hall's or Halliana honeysuckle, which is a vigorous grower, almost evergreen, the somewhat downy, rich green foliage even persisting through the winter where protected by blown leaves or snow. The paired flowers are produced in the axil of every leaf in the new growth. They are deeply cleft into two unequal lobes, are creamy white in color, fading yellow, and have a penetrating fragrance, agreeable to most people though too powerful for some. While this honeysuckle is largely used as a trellis or pillar plant, and except for a too luxuriant growth is very satisfactory under such use, its greatest beauty is shown when it is planted where it can cover a rough wall, or a mound, or a terrace, with a dense mat of evergreen branches. Under such circumstances it is admirable at all seasons, and is one of the best plants to employ for such a purpose.

Lonicera Caprifolium, the European woodbine, is represented most favorably by a variety from Russia of Professor Budd's importation, under the number 138 Voronesh. This honeysuckle has been on trial upon the Kansas Station grounds for ten years, and besides proving perfectly hardy in ordinary situations it has shown features that should bring it more prominently before flower lovers. Its growth is vigorous, the shoots long and smooth, the foliage clean and handsome, though not as abundant as in the last. Its flowers are cream-white with pinkish tubes, and richly fragrant, and are disposed so neatly in their abundance that a vine properly trained upon a piazza screen is a joy to the eye. This species is certainly to be recommended to all planters.

Lonicera sempervirens. The scarlet trumpet honeysuckle, a well-known favorite, is another that deserves better treatment at the hands of the gardener. As ordinarily grown, without pruning or training, it is likely to become disagreeably naked below, and by the dying out of the crowded branches to become unattractive throughout. For its perfection in form and bloom it needs attention in the way of an annual removal of overtaxed wood, and the encouragement of strong young shoots to take its place. A very effective way of displaying its beauty as an everbloomer is to grow it as a standard, supporting it at first upon a low pillar, shortening in, during

the period of growth, of the shoots that tend to grow beyond proper limit. This treatment induces the formation of a stout trunk that after a while becomes self-supporting, and of a head of flowering branches, that will give their brilliant bloom throughout the entire summer.

All of these twiners are readily propagated by layers of the ripe wood put down in spring, or of the half-ripened shoots in midsummer. The shrubby species are easily grown from ripe wood cuttings, taken in the fall, protected over winter in cellar or pit, and set deep in nursery rows early in spring.

E. A. POPENOE.

SUGAR BEETS IN KANSAS.

(Press Bulletin No. 76, by J. T. Willard, of Chemical Department.)

The Kansas Experiment Station has continued during the past season to assist the citizens of the State who desire to test further its possible adaptation to the profitable production of sugar beets. The chemist of the Station is a special agent of the United States Department of Agriculture, and, as such, authorized to distribute sugar-beet seed, furnished by the Department, through the mails free of charge, and to receive samples of beets for analysis in the same way. Previous years' experience have shown that no proper test of the capacity of the State to grow good beets for sugar manufacture can be made by the culture of isolated plats, grown in most cases without proper regard for the conditions essential to the production of a root rich in sugar. The Station has therefore practically discontinued furnishing seed for such isolated trials, but has been, and is ready to cooperate with any groups of farmers who wish to experiment with this crop further.

The very considerable growth of the beet-sugar industry in some of our northern states naturally directs our capitalists to this possible field for investment in this State. The sorghum-sugar experience has not gotten so far into the past that its value as an object lesson is entirely lost, and a proper degree of caution is being exercised before large ventures are to be made in the manufacture of sugar from beets here. The Station has cooperated this season in the most extended and best conducted series of tests yet made in this State. Gentlemen interested in the matter secured the growing of a considerable number of plats in the eastern part of the Kansas river valley, for the most part, under the supervision of an experienced man. Seed was furnished by the Station and the beets analyzed there. The total number of samples taken was eighty-three, grown by sixty-five different men. The average amount of sugar found was 9.93 per cent. The beets analyzed early were the best, and it is possible that at a still earlier date higher results might have been obtained. Those analyzed before September 20 averaged 10.99 per cent of sugar. W. J. White, of DeSoto, and N. W. Nobertson, of Lenape, produced the best samples, with 12.81 per cent of sugar. The average results of analyses made in three preceding years were as follows: 1897, 11.88 per cent; 1898, 11.56 per cent; 1899, 10.89 per cent.

A proper view of the prospects for a successful inauguration of this industry in this State must include a comparison of these figures with those yielded by beets grown in regions where beet sugar is being successfully manufactured. The sugar journals report the production of beets this season with percentages of sugar as follows, at the places stated: New York, 10 to 17.65; Nebraska, 13.5; Indiana, 13.7; Michigan, 14 to 15; Washington, 18; California, 17; Colorado, 17 to 22. Comment would seem to be unnecessary.

WEATHER REPORT FOR DECEMBER, 1900, AND YEARLY SUMMARY.

Temperature.—The mean temperature was 35.16°, which is 4.89° above normal. There have been 9 warmer and 32 colder Decembers in the past 42 years. The highest temperature was 63° on the 17th; the lowest, 2° on the 31st—a monthly range of 66°. The greatest daily range was 38° on the 1st and 13th, the least 1° on the 24th. The mean daily range was 20.26°. The warmest days were the 16th and 17th, the mean being 49.5°; the coolest the 31st, the mean being 10°. The mean of the daily maxima was 45.29°; of the daily minima, 25.03°.

The following table gives comparisons with preceding 42 Decembers:

Dec.	Number of Rains.....	Rain in Inches.....	Per cent of Cloudiness...	Prevailing Wind.....	Mean Temperature.	Maximum Temperature	Minimum Temperature	Mean Barometer.	Maximum Barometer..	Minimum Barometer..
1858.....	3	1.11	.....	.....	25.96	56	-16	.....	.....	.....
1859.....	1	.20	38	NW	20.90	62	-8	.....	.....	.....
1860.....	3	.50	30	NW	32.43	52	12	.....	.....	.....
1861.....	3	1.00	28	S	32.19	65	0	.....	.....	.....
1862.....	3	2.25	35	SW	39.50	65	14	.....	.....	.....
1863.....	4	2.17	31	NW	27.93	59	13	.....	.....	.....
1864.....	4	1.11	61	NW	27.07	58	-6	.....	.....	.....
1865.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
1866.....	4	2.02	60	N	28.89	57	4	.....	.....	.....
1867.....	2	.51	46	NW	35.44	62	15	.....	.....	.....
1868.....	3	.81	53	SW	24.85	57	-16	.....	.....	.....
1869.....	4	.16	43	NW	30.05	58	-3	28.82	29.20	28.45
1870.....	4	.45	46	SW	29.93	63	-11	.....	.....	.....
1871.....	1	.35	39	SW	24.17	53	-6	.....	.....	.....
1872.....	3	.95	47	S	21.02	60	-11	.....	.....	.....
1873.....	4	1.67	60	SW	28.71	65	5	28.74	29.26	28.29
1874.....	3	.67	48	SW	31.66	58	0	28.82	29.32	28.28
1875.....	2	.78	51	SW	38.22	72	4	28.70	29.11	28.20
1876.....	1	.50	41	SW	20.29	69	-11	28.97	29.50	28.43
1877.....	3	1.55	52	SW	41.68	67	13	28.81	29.20	28.30
1878.....	4	.91	50	SW	21.35	57	-7	28.89	29.33	28.27
1879.....	2	.62	45	NW	24.75	56	-10	28.60	29.12	27.97
1880.....	1	.28	57	SW	24.40	65	-16	28.69	29.21	27.92
1881.....	3	.53	57	SW	38.48	65	16	28.73	29.04	28.29
1882.....	3	.44	58	NW	29.59	62	-7	28.72	29.49	28.10
1883.....	2	.27	51	SW	33.04	66	2	28.68	29.14	27.98
1884.....	5	.33	50	NE	21.70	57	-7	28.58	28.95	28.10
1885.....	4	1.09	47	S	33.03	60	-4	29.10	29.41	28.56
1886.....	2	1.58	40	NE	24.34	62	-5	29.05	29.66	28.61
1887.....	3	.79	39	N	26.09	56	-9	29.07	29.88	28.43
1888.....	3	1.22	31	N	33.39	64	10	29.07	29.46	28.47
1889.....	2	.02	25	SW	42.75	75	0	28.90	29.40	28.11
1890.....	2	.18	28	SW	35.09	72	3	29.01	29.47	28.37
1891.....	4	1.09	24	SW	38.60	67	5	28.82	29.48	28.18
1892.....	7	1.75	44	SW	22.76	67	-9	28.95	29.39	28.45
1893.....	4	.70	24	SW	34.18	68	4	28.94	29.49	28.45
1894.....	2	.37	31	SW	36.58	73	-4	28.94	29.60	28.29
1895.....	4	.59	42	N	32.95	64	5	28.83	29.24	28.28
1896.....	1	.26	35	S	39.80	71	18	28.95	29.56	28.53
1897.....	3	1.28	33	SW	27.41	62	3	28.99	29.51	28.33
1898.....	4	1.33	26	SW	26.29	58	1	29.04	29.83	28.38
1899.....	5	1.13	42	SW	29.68	59	6	29.02	29.60	28.51
1900.....	4	.41	49	N	35.16	68	2	28.98	29.37	28.13
Sums.....	129	35.93	1737	.....	1271.30	.....	.....	837.40	.....	.....
Means.....	3	.86	42	SW	30.27	.....	.....	28.87	.....	.....

Barometer.—The mean pressure for the month was 28.98 inches, which is 0.11 inch above the normal. The maximum was 29.37 inches at 7 A. M. on the 9th, the minimum 28.13 inches at 7 A. M. on the 22d—a monthly range of 1.14 inches.

Cloudiness.—The per cent of cloudiness was 49, which is 7 above normal. The per cent at 7 A. M. was 56.5; at 7 P. M., 41.9. Ten days were cloudy, 10 partly cloudy, and 11 were clear.

Rainfall.—The total rainfall was 0.41 inch, which is 0.45 inch below normal. There have been 31 Decembers with more rainfall and 10 with less. Rain fell in measurable quantities on 4 days.

Wind.—The wind was from these directions the following number of times: North 16, northeast 5, east 1, southeast 8, south 8, southwest 14, west 2, and northwest 8. The total run of wind was 6366 miles, which is 857 miles below normal. This gives a mean daily velocity of 205.35 miles and a mean hourly velocity of 8.55 miles. The maximum daily velocity was 470 miles on the 23d; the minimum, 62 miles on the 5th. The maximum hourly velocity was 27 miles from 6 to 9 P. M. on the 22d.

WIND RECORD.

DECEMBER.	Total Miles.....	Mean Daily.....	Maximum Daily.....	Minimum Daily.....	Mean Hourly...	Maximum Hourly...
1889.....	8046	259.55	576	51	10.81	47
1890.....	6414	26.90	431	82	8.62	32
1891.....	10030	323.55	632	65	13.48	48
1892.....	5426	175.03	449	69	7.29	25
1893.....	7903	254.93	466	65	10.62	27
1894.....	8438	272.20	557	92	11.30	34
1895.....	8357	269.58	594	92	11.23	40
1896.....	5788	186.71	438	76	7.78	32
1897.....	6928	223.48	481	96	9.31	30
1898.....	6774	218.52	393	70	9.11	27
1899.....	6203	200.10	433	66	8.34	30
1900.....	6366	205.35	470	62	8.55	27
Sums.....	86673	2795.90	.....	.....	116.44	.....
Means.....	7223	232.99	.....	.....	9.70	.....

The temperature for the year was 2.87° above normal; the only months below normal were February and July. The rainfall was 1.89 inches below normal. This deficiency in itself was not serious, had the distribution throughout the year been normal. Nine months were deficient and three—February, April, and September—in excess of normal. The June rainfall was only one-fourth normal. Nearly double the normal amount of rain in September has given winter wheat an excellent start. The cloudiness was three below normal and the hourly wind velocity 0.56 mile below.

SUMMARY FOR THE YEAR.

MONTH.	Temperature.			Rainfall.			Cloudiness.			Hourly Wind Velocity.		
	1900.....	Normal.....	Departure....	1900.....	Normal.....	Departure....	1900.....	Normal.....	Departure....	1900.....	Normal.....	Departure....
January.....	32.56	25.39	7.13	.12	.76	-.64	30	42	-12	6.55	8.98	-2.43
February.....	25.07	29.66	-4.59	2.92	1.11	-1.81	37	43	-6	9.11	10.19	-1.08
March.....	40.82	40.33	.49	.49	1.35	-.86	23	42	-19	10.23	12.53	-2.30
April.....	58.43	54.20	4.23	3.23	2.81	.42	49	43	6	12.38	13.22	-.84
May.....	67.57	64.22	3.35	4.03	4.15	-.09	39	42	-3	9.24	11.19	-1.85
June.....	76.05	73.42	2.63	1.19	4.45	-3.26	33	39	-6	8.87	9.84	-.97
July.....	77.62	80.17	-2.55	4.51	4.80	-.29	28	32	-4	10.95	8.89	2.11
August.....	82.65	76.34	6.31	2.84	3.46	-.62	30	34	-4	10.99	8.27	2.72
September.....	71.63	67.90	5.73	5.37	3.01	2.36	34	35	-1	10.67	9.76	.91
October.....	63.05	54.38	8.67	2.22	2.25	-.03	33	33	0	9.26	9.78	-.52
November.....	40.97	35.87	1.10	1.01	1.25	-.24	41	40	1	8.87	10.05	-1.18
December.....	35.16	30.27	4.89	.41	.86	-.45	49	42	7	8.55	9.70	-1.15
Year.....	55.97	53.10	2.87	28.37	30.26	1.89	36	39	-3	9.64	10.20	-.56

ERNEST R. NICHOLS, Observer.

Volume 27.

Number 14.

THE INDUSTRIALIST

ISSUED WEEKLY BY

KANSAS STATE
AGRICULTURAL COLLEGE



Editor-in-Chief,

Pres. E. R. Nichols

Local Editor,

Prof. J. D. Walters

Alumni and Former Students,

Prof. J. T. Willard



Published by
PRINTING DEPARTMENT
J. D. Rickman, Supt.

Entered at post-office, Man-
hattan, Kan., as second-class
matter. Act of July 16, 1894.

Historical Society

BOARD OF INSTRUCTION.

ERNEST R. NICHOLS , A. M. (University of Iowa), President.....	631 Poyntz avenue
JOHN D. WALTERS , M. S. (Kansas State Agricultural College).....	North end of Sixth street
Professor of Industrial Art and Designing.	
ALEXANDER B. BROWN , (Boston Music School), A. M. (Olivet).....	817 Houston street
Professor of Music.	
JULIUS T. WILLARD , M. S. (Kansas State Agricultural College).....	1211 Moro street
Professor of Applied Chemistry.	
ALBERT S. HITCHCOCK , M. S. (Iowa Agricultural College).....	College Hill, 2 miles N. W. of College
Professor of Botany.	
FREDRIC A. METCALF , O. M. Superioris Honoris (Emerson Coll. Oratory) 730 Poyntz avenue	
Professor of Oratory.	
GEORGE F. WRIDA , Ph. D. (Johns Hopkins).....	517 Fremont street
Professor of Pure Chemistry.	
HENRY M. COTTRELL , M. S. (Kansas State Agricultural College).....	College Campus
Professor of Agriculture, Superintendent of Farm.	
MISS MINNIE A. V. NELLIE STONER , (Boston N. S. of H. A.), B. S. (S. D. A. C.) 5 S. Juliette ave	
Professor of Domestic Science, Dean of Women's Department.	
JOSEPH D. HARPER , M. S. (Rose Polytechnic Institute) Houston st., between 6th. and 7th. streets	
Professor of Mechanical Engineering, Superintendent of Shops.	
EDWIN A. POPENOE , A. M. (Washburn).....	Seventh and Osage streets
Professor of Horticulture and Entomology, Superintendent of Orchards and Gardens.	
FRANK C. LOCKWOOD , Ph. D. (Northwestern).....	Fourth and Osage
Professor of English.	
BENJ. L. REMICK , Ph. M. (Cornell College).....	Fourth and Osage
Professor of Mathematics.	
BENJ. F. EYER	512 Houston street
Professor of Physics and Electrical Engineering.	
C. E. GOODSELL , A. M. (Franklin).....	626 Houston street
Professor of History and Economics.	
SEPTIMUS Sisson , S. B. (Chicago), V. S. (Toronto).....	Cor. Manhattan avenue and Moro
Professor of Zoölogy.	
TAIT BUTLER , V. S. (Toronto) ..	—
Professor of Veterinary Science.	
MISS HARRIET HOWELL , (Pratt Institute).....	5 S. Juliette avenue
Superintendent of Domestic Art.	
JOSHUA D. RICKMAN , I. T. U.....	911 Osage street
Superintendent of Printing.	
MISS JOSEPHINE T. BERRY , A. B. (Kansas University)	801 Poyntz avenue
Librarian.	
B. S. MCFARLAND , A. M. (Miami).....	Fourth and Osage
Principal Preparatory Department.	
.....	—
Director of Physical Training.	
MISS LORENA E. CLEMONS , B. S. (K. S. A. C.), Secretary.....	Corner Fourth and Laramie
D. H. OTIS , M. S. (Kansas State Agricultural College).....	College Hill
Assistant Professor of Dairying.	
WILLIAM ARCH MCKEEVER , A. M. (Kansas University)	621 Houston street
Assistant Professor of English and Philosophy.	
MISS JOSEPHINE C. HARPER , Instructor in Mathematics.....	Corner Sixth and Pierre streets
MISS ALICE RUPP , (Indiana State Normal), Instructor in English.....	620 Houston street
CHARLES EASTMAN , Cadet Major and Acting Commandant	611 Poyntz avenue
William L. House , Foreman of Carpenter Shop.....	Corner Sixth and Colorado
Chas. W. Pape , M. S. (K. S. A. C.), Ass't in Zoölogy and Ass't Curator Museum.....	918 Osage st
R. W. Clothier , M. S. (K. S. A. C.), Assistant in Chemistry.....	Fremont, between Fifth and Sixth
Margaret J. Minis , Assistant Librarian.....	Fourth and Moro streets
R. H. Brown , M. T. (Kan. Con. of Music), B. S. (K. S. A. C.), Ass't in Music.....	817 Houston street
J. M. Westgate , M. S. (K. S. A. C.), Assistant in Botany, Cor. Manhattan avenue and Vattier	
May Secret , B. S. (K. S. A. C.), Assistant in Domestic Art, Cor. Leavenworth and Seventh	
Wm. Anderson , B. S. (K. S. A. C.), Assistant in Mathematics.....	Cor. Humboldt and Juliette ave
Gertrude Barnes , Assistant Librarian.....	Cor. 9th and Moro
Albert Dickens , B. S. (K. S. A. C.), Assistant in Horticulture, Fremont and Manhattan avenue	
William Baxter , Foreman of Greenhouses	—
J. G. Haney , B. S. (K. S. A. C.), Ass't in Feeding and Field Experiments, Manhattan ave and Kearney	
Mary Pritner , B. S. (K. S. A. C.), Assistant in Domestic Science	Cor. 7th and Leavenworth
Theodore Lindquist , M. S. (Northwestern), Ass't Physics.....	Cor. Fifth and Humboldt
W. M. Sawdon , B. S. (Purdue), Assistant in Mechanics.....	Juliette and Houston
O. I. Purdy , B. S. (K. S. A. C.), Assistant in Printing.....	1216 Fremont street
Ada Rice , B. S. (K. S. A. C.), Assistant in Preparatory Department.....	Osage and 8th. street
Louis Wabnitz , Foreman Iron Shops.....	5th and Osage
Henry Van Leeuwen , (Univ. Wis. D. S.) Inst'r in Cheese Making	Manhattan and Kearney
E. W. Curtis , (Univ. Wis. D. S.) Instructor in Butter Making.....	—
Florence L. Grant (Mass. Normal Art School), Assistant in Drawing... ..	Fourth and Osage
A. T. Kinsley , B. S. (K. S. A. C.), Assistant Veterinary Department, Tenth and Kearney sts	
Elizabeth Agnew , B. S. (K. S. A. C.), Assistant in Entomology.....	Ninth and Moro streets
Jesse B. Norton , B. S. (K. S. A. C.), Assistant in Foundry and Blacksmith Shop ..	—
E. C. Gasser , Foreman of Foundry and Blacksmith Shop ..	—
Ina E. Holroyd , B. S. (K. S. A. C.), Engineer.....	—
Jacob Lund , M. S. (K. S. A. C.), Clerk in Director's office.....	—
C. Jeanette Perry , B. S. (K. S. A. C.), Executive Clerk.....	Cor. Tenth and Kearney
Alice Melton , B. S. (K. S. A. C.), Clerk in Director's office.....	Corner Colorado and Fifth
W. R. Lewis , Janitor.....	—
Archie Huycke , Secretary to President.....	N. E. corner Main College Building
	Manhattan avenue and Kearney

THE INDUSTRIALIST.

VOL. 27.

MANHATTAN, KAN., JANUARY 15, 1901.

No. 14

SCIENCE WORK IN THE COMMON SCHOOLS.

(Paper read before the Central Kansas Teachers' Association, at Newton, November 30, 1900.)

THERE is a difference between "science in a general education" and a special education in the sciences. The former of these is to be my subject so far as it relates to the possibilities of instruction in science in the common schools of Kansas.

The time was when there was neither laboratory work nor observation work of any kind in our colleges; but that time is fortunately past. There is no need of any argument now about the educational advantages of college work in science; everybody realizes that language work and mathematical work (valuable as they are) would be but a partial education.

The first step I want you to take with me is to realize that you have the pupils at that time of life when they are most inquiring, when their interest is most easily aroused concerning the world in which they live, even if their powers of reasoning are incomplete or immature. If this is so, you have the responsibility of keeping this interest awake so that the future education shall not be incomplete or partial. In other words, you are giving the child only a part of what it needs if you do not arouse in it an interest in its surroundings, and a desire to inquire into them, and to observe as far as the opportunities allow. We do not want another generation that have eyes and do not see, and have ears and do not hear.

The first essential in all science instruction, whether in the public school or the college, is the love of the truth, and the desire to find out the truth from nature so far as possible. The first caution, then, is not to use "book methods" but natural methods. One or two hours each week at least can be spent profitably in considering the questions presented by the world about us without any text-book. But, valuable as this "laboratory method" is, you can press it too far—for example, if you expect the student to discover everything for himself and give him neither assist-

ance nor encouragement. There has been a recoil from the tendency to make the student rediscover for himself all the laws of nature. It took many generations of wise and mature minds to do this; and you must not expect it to be repeated by an immature mind within a few months. The latter error (of expecting too much observation) may be as bad as the former (of no observation). Remember the limitations at hand both in the pupil himself and in the part of nature available as well as apparatus available. We may note here that our Kansas boys have a great advantage over city boys by virtue of their surroundings.

Having said so much about the necessity of instruction in science, we shall pass to the more definite problem of what subjects may profitably be taught to the public-school children, and how you can best prepare them for the science work of the high schools and colleges. In other words, the question is "What should be the relation between the 'nature work' in the common schools and the systematic science work of the college?"

Ten years ago, when attending lectures at the University of Heidelberg, I heard the professor of botany ask the young men attending his lectures to forget all the science instruction they had received in the city schools before beginning his course. This remark impressed me at the time and I have often heard similar statements since then from science teachers of prominence. In fact, this question was the principal one discussed at the session of the section for science instruction during the recent Charleston meeting of the National Educational Association.

If I can interest you sufficiently in the subject to show how your work may be helpful to us in the more advanced work, I shall be happy. If, incidentally, you will note a few of the things that should from our point of view be avoided in elementary work, this, too, may be helpful not only to you and to your pupils, but to those of us who have the responsibility of college instruction. I shall defer general considerations and take up a few special cases in which I find the students coming to me almost entirely deficient.

The Common Atmosphere.—The air in which we live and in which we are constantly moving about must be a subject of the greatest interest, and I shall try to show that a good many things can be discussed and learned without going into technicalities, or requiring experience of things beyond that of the boys and girls in the public schools of Kansas.

In the first place, you can present the reality of the atmosphere as matter, although it is invisible. Get the pupil to realize its importance not only to our physiology of respiration, but to every fire in every stove. Even the experience of a young boy or girl will show that the stove is checked as you shut off the air supply. He will learn by and by that ten tons or more of air are passed through the stove for every ton of coal used.

Returning for a moment to the question of the reality of the atmosphere as matter, whether it has weight or not, you may observe that the question could not be settled until we had a means of transferring air into vessels or out of them. Air pumps have now been known for several hundred years and are almost as familiar as the pumps for water, while condensing pumps are familiar to every boy that has seen a bicycle or a football. Given a pump, we can get more or less air into a certain space, and it did not take long to notice the difference in weight according to the amount of air present.

The judgment of each teacher may indicate wheather it is wise to pursue the subject of atmosphere any further; but with you I shall follow the last consideration—of the weight of air—by a few words as to “vacuum.” It is a fact well known that liquids will remain standing to a considerable height in tubes which have no opening at the top, a common illustration being found in some forms of pumps, or in inverting a tumbler full of water in a dish of water. If, however, air is admitted by opening the valve of the pump, or by a hole in the tumbler, “liquids seek their own level.”

The old explanation was that “nature abhors a vacuum,” so that the liquid rises. When it is found, however, that the rise of water is limited to a little over thirty feet, and the rise of quicksilver, or mercury, never exceeds thirty inches, we had to seek a new explanation in the barometer, and learned to know the variations of the barometer. I can enter no further into this matter, but I do maintain and insist that every teacher of school children should understand the construction of the “barometer” and be able to appreciate the significance of low barometer or high barometer when reading the reports of the weather bureau. Look up the matter for yourselves and then use your own discretion as to the time in his career when it is best for the pupil in your schools to know what a barometer is and what it signifies.

Water.—Next in importance to the “ocean of air,” at the bot-

tom of which we live, is the water in which we could not live at all, but without which we could not live. It would surprise you if you realize how little the students coming to me know about the properties of the ordinary water of our springs or rivers, not to mention the ocean. I am not speaking at all of technical knowledge of the chemistry of water, but of general information which each one of you can give to your pupils.

We may begin our consideration with the three physical states of water—ice, liquid water, and steam. How many of your pupils realize what takes place in the cooling of water and freezing of a stream; or on the other hand the heating of water and the formation of steam. Closely related to the latter subject would be that of the pressure of confined steam, and its use in every steam engine as well as in heating buildings.

Aside from the actual formation of steam by the boiling of water, how interesting would be the subject of evaporation at ordinary temperatures, a subject surely familiar in the experience of every one, and of the greatest importance in the plant and animal world. Incidentally, any one may observe the cooling attending the evaporation of water or other liquids.

Another consequence of evaporation is the humidity of the atmosphere, which in turn shows itself in dews and fogs. I maintain that both dews and fogs should be intelligently understood by the pupils of Kansas schools, as well as by the teachers of the Kansas schools.

Silica.—Silica is one of the minerals that should receive attention, whether it is in the form of sand, of flint, or of the more beautiful "rock crystal." It is well to realize that this material composes at least thirty-five per cent of the earth's crust, while if we include compounds containing silica (the silicates) we have over ninety per cent of the rocks.

In the more interesting form of crystallized quartz or "rock crystal" the child can gain a good conception of what we mean by crystals in general. A very young child will be interested in the distribution of the planes and the amount of symmetry as well as the regularly recurring numbers of planes. It is well to call attention to the similarity of quartz crystals to ice crystals, and to trace the origin of the very word "crystal" back to the Greek word for ice.

Other physical properties may be alluded to, such as the fact

that quartz cannot be scratched by a knife blade (or needle) which would distinguish it from other things of similar appearance. It might even be possible to show that it is not affected by a few drops of acid (hydrochloric acid), thus furnishing an interesting distinction between flint and limestone.

With the old pupils, it might be possible to contrast the position of silica in the rocks or mineral world with that of carbon compounds so universally distributed through the organic world—all plant and animal life.

Having thus discussed an example of a gas (the air we breathe), of a liquid (in the water we drink), and of a solid in silica (which forms the rocky material of the earth's crust), I shall mention a few others that could easily be used and would prove interesting and helpful.*

Rock-salt. Calc-spar (a pure form of the material we have in limestone). Mica (such as we use in stove-doors). Ores (of lead, zinc, or iron). Coal (its origin and uses). Mercury (or quick-silver). All of these would be of interest as such without undertaking any experiments on them, confining the study to a merely descriptive kind, and such information as the teacher can easily supply concerning them. The list might be considerably prolonged if we introduced some of the common materials used in every-day life, with experiments to show their properties.

The object of all this work is to keep awake in the child a proper respect for the world surrounding him, a proper respect for a fact, and to lead him to see for himself the environment in which he lives. In short, the motto is often put: "Study nature, not books." If you think this too strong, leave it at least to read: "Study nature as well as books."

The question naturally arises why I have not said anything about plants or animals as subjects for nature study in the common schools. There are several reasons. The teachers of Kansas have already given a good deal of thought to this phase of the subject, and know the charm and interest in plants or animals well chosen, especially if these are living plants or animals. Again, although we must admit the interest aroused by plants and animals, we must also realize their complexity, the unfathomable

*For details on several of the things included here, teachers may consult the pamphlet on "Mineral Resources of Kansas," published by the University Geological Survey. It may be had for the price of postage, eight cents, on application to the State University, at Lawrence.

mysteries of life and of protoplasm. Then, too, we must realize that in the history of the world, atmosphere, water, rocks and soil came before plant and animal life, and that the latter is still dependent on atmosphere, water, and the earth.

In conclusion, let me give a few don'ts which I beg you to bear in mind in your attempts at science instruction:

1. Do not attempt in any science to take up the systematic work of classification and details, measurements, etc., which may kill all the interest of a young pupil. That can come in the higher schools, and will be better for the foundations laid by you in "nature study."

2. Do not attempt to theorize. Keep very close to the facts that can easily be established or observed. Teach respect for a fact rather than for somebody's view about atoms, or vibration, or evolution, or the origin of the solar system, or of the universe. Keep near the earth. The theories, whether helpful or troublesome, should come later. I wish I might go into detail to show how annoying it is to have students come to us full of the theory of gases, or of the nebular hypothesis without knowing the facts either about gases or about the sun and solar system. Let me plead again that it would be so much better for students to know the air they breathe, the water they drink, and the rocks on which they move about rather than to discuss "atoms" and "molecules," which no man has ever seen.

3. If you teach anything about plant or animal life, do not expect a student to understand the more complex problems of physiology until they have had physics and chemistry. There is no use in driving pupils to despair by expecting that which is impossible of them.

4. Do not be afraid to acknowledge there are facts you do not know. Show a desire to go to work on the material and make nature answer your question, if possible. Of course, the more knowledge you have the better—you will not feel in danger of reaching your limits. At any rate, do not keep this kind of work from your children.

I hope you may begin "Nature Study" at once.

GEORGE F. WEIDA.

VALUE OF INDUSTRIAL TRAINING.

IN ESTIMATING the value of industrial training it is usually the practical side alone that is considered, while the culture value of such work is ignored. Apparently, many who believe in industrial work as a training for the hand do not realize that it is also the very best training for the mind, and that from a purely educational point of view it has a value that far outweighs all the practical advantages.

For hundreds of years education, in so far as schools were concerned, was almost entirely a matter of memory—the acquirement of a certain stock of information of more or less value, and while it must be admitted that frontal development is a most important portion of any educational system, yet it is not the only thing to be considered in the proper training of the human faculties.

Accustomed for generations to thinking of education as a matter of books and classrooms and chalk dust, it is hard to associate it with overalls, oily hands and the whirl of machinery. It is admitted that chemistry, physics, and the sciences generally, are best taught by laboratory methods, but when industrial work is under consideration the practical, labor side is so much in evidence that one fails to realize the importance and value of the culture side of such work. Until very recent years education has been a thing apart from the practical matters of life. It was not a training for anything in particular, did not fit one for any of the duties and for few of the opportunities of modern life, yet there are still many persons who cannot relinquish the idea that education should deal only with generalities; that culture is only obtainable from the study of certain select subjects.

It has been well said that education should consist of the proper training of head, hand and heart, and that its object should be the development of character. Although the studies supposed to train the head in reality develop but a few of the mental faculties, it is a mistake to infer that those training the hand have no other function. On the contrary, industrial work gives a broadening and uplifting training of the greatest educational value and results in a character building of more worth than all the moral advantages. The ability to do certain kinds of work and the acquirement of manual skill do not constitute all that is valuable in industrial training. The perceptive faculties are stimulated, the

reasoning powers are trained, judgment and decision are developed, habits of accuracy formed, and there results a growth of the manlier qualities which do more for future success than the actual skill acquired in certain lines of work.

The strong moral training that results from industrial work is also a most valuable feature. The student who learns the folly of a lie in wood or iron will unconsciously despise a lie in words. He learns that the simple and straightforward device is best; that the laws of physics and mechanics are inexorable and cannot be evaded, and that equivocation and dishonesty are signs of weakness and incompetency. And yet there are those who do not realize that industrial work has an educational value.

It is certainly of as much importance to train the constructive and creative faculties as to train the memory; as important to develop judgment and decision as to rehearse the opinion of others. The world has need for well-balanced men and women who are strong in perception, apt in manipulation and correct in interpretation. The utilitarian aspect of manual training, however, hides this culture side and the tendency is always towards according a secondary place to "industrials;" but it should be clearly recognized that there is, in industrial work, an educational development of the greatest value. In a college of applied science, such as the Kansas State Agricultural College, the laboratory and industrial work should be arranged in a graded and progressive sequence, and the student should be impressed with the necessity of giving to it his best and most earnest effort. A thorough understanding by both teacher and student of the educational value of industrial work is necessary in order to affect a realization of its potential benefits.

There still remains to be mentioned the practical value of such work—the increased earning capacity that results from the manual skill acquired. The question of earning a living confronts most young men upon leaving college. They have spent time and money upon an education and naturally expect to be better able to cope with the world in consequence of their college training. They expect to have gained not only a certain amount of culture but also a knowledge and skill that will yield returns in dollars and cents. The demand of to-day is for men and women who can *do something*. The business world is interested not in what one thinks but in what he can do. And to the young man seeking a

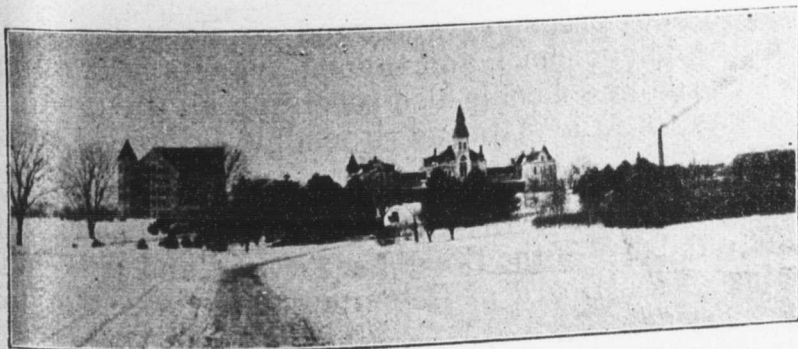
foothold, the skill acquired through manual training is invaluable. His ability to do something that the world wants done enables him to start, and he is usually willing to start at the bottom. His training has destroyed certain false conceptions of life and he realizes that a man is valued for what he can do himself and not for what he knows of others' deeds.

But a glance at the labor market is needed to convince one of the money value of good manual training. Law, medicine and the ministry are overcrowded; a single vacancy in the schools will bring enough applicants to supply the country; where one clerk is wanted forty will apply; and still the unceasing cry goes up for skilled workmen. Men with trained hands and intelligent minds are in demand, and the scarcity of first-class foremen for manufacturing establishments constitutes a serious menace to our future commercial success.

The young men who graduated last June from one of the technical courses of this College secured employment as soon as they applied for positions. Several have been promoted, and the writer has yet to hear of a case where a man, who had completed his work in the College shops, was denied the opportunity of showing what he could do.

But there seems to linger in the minds of some an impression that education and culture are matters separate and distinct from practical industrial training, and that ideals are sacrificed when consideration is given to the money value of a college training. It is, however, an indisputable fact that the *mental, moral and social* welfare of any nation rests primarily upon its *material* welfare. And this material prosperity depends upon the nation's commerce, its agriculture and its manufactures. This is the age of the dignity of labor, and our educational ideas should be in harmony with the spirit of the age.

J. D. HARPER.



THE INDUSTRIALIST.

BOARD OF REGENTS.

*Published weekly during the College year by the
Printing Department of the*

KANSAS STATE AGRICULTURAL COLLEGE. Manhattan, Kansas.

☆ ☆ ☆

PRES. E. R. NICHOLS.....Editor-in-Chief
PROF. J. D. WALTERS.....Local Editor
PROF. J. T. WILLARD.....Alumni Editor

HON. E. T. FAIRCHILD, President....Ellsworth
HON. J. S. McDOWELL, Vice-President,
Smith Center
HON. W. T. YOE, Treasurer.....Independence
HON. WM. HUNTER, Loan Comm'r, Blue Rapids
HON. MRS. SUSAN J. ST. JOHN.....Olathe
HON. CARL VROOMAN.....Parsons
HON. J. M. SATTERTHWAITE.....Douglass

PRES. E. R. NICHOLS, Sec. *ex-officio*.

LOCAL NOTES.

The grippe is abroad in the city.

The library has received about a hundred new books and the librarians are busy cataloguing them.

Ex-professor Geo. H. Failyer has sold his land southeast of Manhattan to Mr. Homer Soupene, for \$1600.

The College football team, after electing F. N. Gillis captain for next year, became dormant for the winter term.

There is a picture of the College on every sack of the Manhattan Milling Company's "Manhattan No. 1" flour.

Prof. A. B. Brown has been confined to his home during the past week on account of a severe attack of the grippe.

Ex-President Thos. E. Will is now located at Trenton, Mo., as general secretary of the American Oxford Movement.

The dairy department shipped one thousand three hundred pounds of butter to Providence, R. I. This butter was made by students in the dairy school.

The carpenter shop is building three handsome bookcases for the Farm Department, a neat sideboard for Mr. Linscott, '91, and a china closet for Assistant Pritner.

Prof. F. C. Lockwood delivered an address before the State University Y. M. C. A., last Sunday afternoon. In the evening he addressed the young Indians of Haskel Institute.

The beginning class in chemistry has sixty students this term. This, with an even hundred beginners in the fall term, makes the largest class in inorganic chemistry in the history of the College.

The Manhattan creamery arranged to close during the three months of the dairy school, and turned over its milk supply to the College. The dairy school is also receiving all the cream from the Rossville, Paxico, Alta Vista and Stockdale skimming stations.

Regent Satterthwaite, of Douglass, made this office a pleasant call to-day. Mr. Satterthwaite is a rustling newspaper man, owner and publisher of the Douglass *Tribune*, and is here to attend the meeting of the Board of Regents called for this afternoon.—*Manhattan Republic*.

Assistant Henry Van Leeuwen went, Saturday, to his home at Holton to visit a few days. On Tuesday he read a paper before the State Dairy Association and was at his post again Wednesday.

Postmaster Winne reports that since the numbering of the houses is almost completed he looks for an early establishment of free mail delivery at Manhattan. Everything will probably be in good running order by March 1.

The Board of Regents were in session on Thursday, Friday and Saturday to consider the financial condition of the College and the appropriations to be asked of the legislature. Every member was present, except Hon. Carl Vrooman.

The snow on Wednesday morning brought the old snow-plows into action again. By evening it began to cake and afforded excellent exercise for snowballing parties. South of the Main building the whole air was full of the cold projectiles, but there were no casualties and no broken glass.

During the past week Prof. J. D. Walters received four applications for special instruction in architectural drawing by young mechanics in the eastern part of the State. After working at their trades for a few years these men began to feel the imperative necessity of more knowledge in graphic work, only to discover that it would be a difficult matter, now, to obtain it.

The recently organized Department of Zoölogy and Physiology has just received a much-needed addition to its equipment. This consists of a number of the well-known zoölogical wall charts, edited by Leuckart and Nitsche, illustrating the structure of examples of the various phyla of animals. While this mitigates the existing conditions, the most serious disabilities, viz., the lack of laboratory and museum facilities, remain painfully obvious.

BLOODED STOCK FOR THE COLLEGE.—As a result of the discussion of the need of fine stock on the College farm, four breeders donated the College an animal each as a starter. Steele Bros., of Belvoir, J. M. Foster & Co., of Topeka, and West & Son, of Silver Lake, donated each a Hereford, male or female, and the choice from their herds. John Warner, our old friend of Eureka valley, donated a Shorthorn heifer. The acts of these gentlemen show the urgency of the needs of the College.

The Printing Department is "filled to overflow" this term. Instruction begins at 7:30 A. M. and continues, without intermission, until six o'clock every day except Saturday, when, as the boys say, they "saw off" at five o'clock. The classes are scattered over the five rooms of the department, so that this is a case where an instructor should be in five places at once, but Superintendent Rickman comes near doing it. A vast amount of work is turned out of the department, including the weekly issues of THE INDUSTRIALIST and *Students' Herald*. The department is sadly in need of more and better equipment.

The sixth entertainment of the College lecture course will be given on January 24, by the Oxford Musical Club, an entirely new, novel and popular concert company. The Oxfords will give an evening's entertainment that is both interesting and amusing. The program has been carefully arranged to suit all tastes. Among the many instruments used by the company are the piano, guitar, mandolin, flute, piccolo, violin, cornet, slide trombone, banjo, xylophone, ocarina, drum, organ pipes, and bells.

Last Friday evening the Domestic Science Department gave a reception in the Domestic Science building to the Board of Regents, the Faculty and the class in special physiology. About one hundred guests were present. Light refreshments were served and addresses were given as follows: "Our College" by President Nichols, "Domestic Science Department" by Professor Cottrell, "Our Board of Regents" by Professor McKeever, "Reply" by President Fairchild, of the Board of Regents, "Our Lady Regent" by Professor Stoner, "Farewell" by Mrs. St. John. The reception was a success in every particular and a credit to Professor Stoner, who had charge of the entertainment.

The members of the Board of Regents attended chapel on Saturday morning. At the close of the exercises President Nichols asked Hon. Mrs. St. John, and Hon. E. T. Fairchild to speak to the students, and both responded with brief addresses. Mrs. St. John stated that she had nearly served her term as a Regent and was glad to note the many evidences of growth of the College. She expressed her belief in the future of industrial education and extended her heartfelt well wishes to the students. Professor Fairchild reminded the students of the sacrifices of their parents and the State in building and maintaining educational institutions. He assured them of the deep interest of the members of the Board in the welfare of the College, and expressed the hope that the institution would be treated well by the state legislature now in session. The students showed their appreciation of the addresses by frequent vigorous applauding.

DAIRY ASSOCIATION.—This association was organized by the dairy class of 1900, and includes all members of the dairy classes who pay the initiation fee of fifty cents. The first annual reunion of this class occurred on January 10, 1901, at which time reports were received as to what the different members had been doing since completing their course. Thirteen members reported in person while others sent letters. The dairy class of 1901 attended this reunion and many of them became members of the association. An interesting and instructive program was presented, including a pleasing and valuable address by Professor Walters. In the evening, refreshments were served by Mrs. Cottrell and the dairy class of 1900. Music was furnished by Miss Alice Perry and Mrs. D. H. Otis, and Messrs. Lyman and Smith. The officers for the ensuing year are as follows: President, L. S. Edwards; vice-president, F. E. Uhl; secretary and treasurer, C. C. Winsler.

Governor Stanley, in his annual message to the legislature, speaks of the Kansas State Agricultural College as follows: "The management of this institution during the last two years has attempted to place it in line with the purpose of its creation, and yet the departure from that purpose had been so marked for years that it is doubtful if it will ever be enabled fully to carry out the object for which it was established. The College has been successfully conducted along the line of education which it has pursued. The Faculty and teachers are doing excellent service, and the attendance is very gratifying. The increase in the number of students last year was the largest in the history of the College. The attendance for the present year is equally gratifying, and the enrolment will be nearly or quite as large as the enrolment at the State University. This rapid increase in attendance will render it necessary to provide additional buildings to meet present needs. If the school is to be maintained as a great educational institution, increased appropriations will be necessary. An incidental or matriculation fee, to be fixed by the Regents and President, as their judgment and the welfare of the institution might suggest, would add to the income of the institution without being a burden to those desiring to avail themselves of the benefits of the education afforded by the College." We are glad to hear that the governor recognizes the necessity of meeting the extraordinary growth of the College with an increased appropriation for buildings and equipment. As for the tuition fee or the courses of study offered to students, there is room for honest differences of opinion. Like other ideas, those concerning popular education, and especially those concerning higher education, are undergoing changes. The time will come when the State will ask its institutions of learning, How much can you use to advantage, rather than how little must you have to exist. A college and an asylum are two different things; the one is a motor of civilization—the greater its consumption of fuel the greater its quantity and quality of work; the other simply a pool of stagnant matter, undergoing disinfection.

ALUMNI AND FORMER STUDENTS.

Another grandchild of the institution has arrived. C. J. Reed, '79, and Flora Donaldson-Reed, '81, send their son Alvin to take up the Electrical Engineering course.

The announcement of the death of Nellie Burtner-Sargent, '00, came as a profound shock and surprise to her many College friends. She died Thursday, January 3, of lung fever. Death's calls are seldom welcome, but when, as in this case, he summons one on the threshold of active life, in the bloom of young womanhood, a bride of but a few months, the mystery and the melancholy of the act are trebly deep. Her bereaved relatives have the sympathy of many whom they know not, who were friends of the one who has gone.

KANSAS STATE AGRICULTURAL COLLEGE

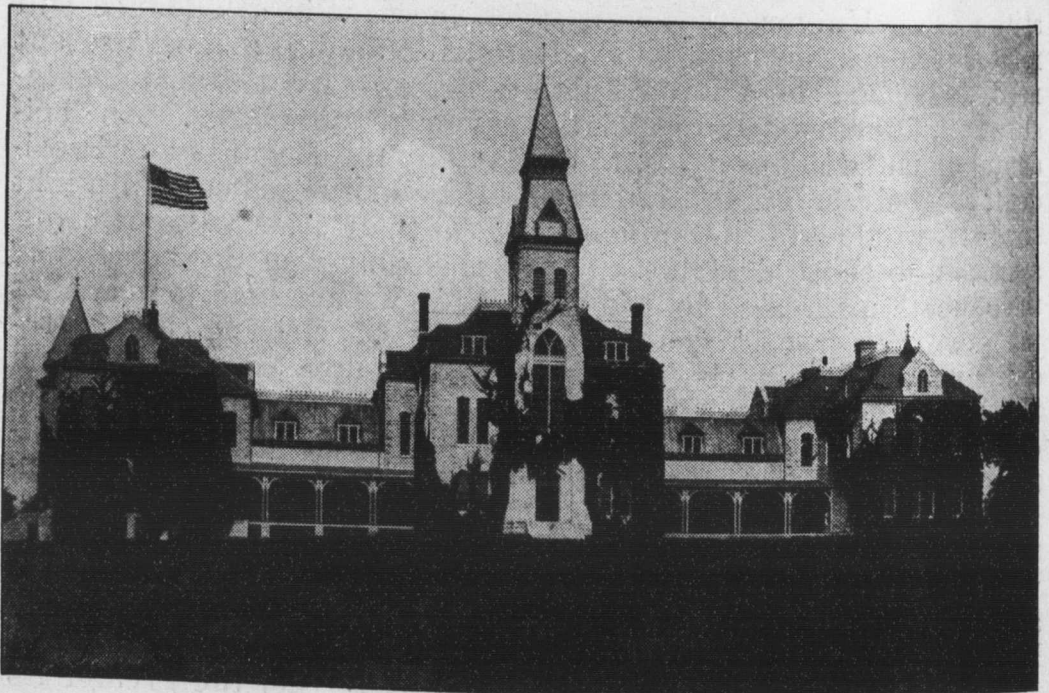
FIVE COURSES OF STUDY.....

Each complete in itself and leading to the degree of Bachelor of Science, are as follows:

- 1—General Science
- 2—Agriculture
- 3—Domestic Science
- 4—Mechanical Engineering
- 5—Electrical Engineering

This Institution

is supported by the General Government and by the State of Kansas, and is designed, by its instruction, to promote the liberal and practical education of the industrial classes in the several pursuits of life.



COLLEGE classes are open to both sexes. Tuition is free in all departments. There is no charge for laboratory supplies. Room and board can be had at very reasonable rates. The yearly expenses, exclusive of clothes and traveling expenses, are between \$100 and \$200. All College laboratories, shops and class rooms are well supplied with needful apparatus and appliances. Practical application is made of the principles learned in the study of the sciences, and thus the College is made a school of applied science.

Domestic Science.

A full course in Domestic Science now in successful operation. The work in the Department of Domestic Science forms an interesting part of the instruction given in the women's course. It is of great practical and disciplinary value.

FOUR SHORT COURSES

Open to students of mature age who cannot, on account of time or money, take one of the four-year courses.

- 1—Apprentice
- 2—Domestic Science
- 3—Dairying
- 4—Agricultural

For catalogue or other information, address

ERNEST R. NICHOLS, A. M., PRES.,
MANHATTAN, KANSAS.

Volume 27.

Number 15.

THE INDUSTRIALIST

ISSUED WEEKLY BY

KANSAS STATE
AGRICULTURAL COLLEGE



Editor-in-Chief,

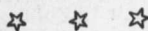
Local Editor,

Alumni and Former Students,

Pres. E. F. Nichols

Prof. J. D. Walters

Prof. J. T. Willard



Published by
PRINTING DEPARTMENT
J. D. Rickman, Supt.

Historical Society

Entered at post-office, Man-
hattan, Kan., as second-class
matter. Act of July 16, 1894.

BOARD OF INSTRUCTION.

ERNEST R. NICHOLS, A. M. (University of Iowa), President.....	631 Poyntz avenue
JOHN D. WALTERS, M. S. (Kansas State Agricultural College)	North end of Sixth street
Professor of Industrial Art and Designing.	
ALEXANDER B. BROWN, (Boston Music School), A. M. (Olivet).	817 Houston street
Professor of Music.	
JULIUS T. WILLARD, M. S. (Kansas State Agricultural College).....	1211 Moro street
Professor of Applied Chemistry.	
ALBERT S. HITCHCOCK, M. S. (Iowa Agricultural College) ..	College Hill, 2 miles N. W. of College
Professor of Botany.	
FREDRIC A. METCALF, O. M. Superioris Honoris (Emerson Coll. Oratory) 728 Poyntz avenue	
Professor of Oratory.	
GEORGE F. WEIDA, Ph. D. (Johns Hopkins).....	517 Fremont street
Professor of Pure Chemistry.	
HENRY M. COTTRELL, M. S. (Kansas State Agricultural College).....	College Campus
Professor of Agriculture, Superintendent of Farm.	
MISS MINNIE AVA NELLIE STONER. (Boston N. S. of H. A.), B. S. (S. D. A. C.) 5 S Juliette ave	
Professor of Domestic Science, Dean of Women's Department.	
JOSEPH D. HARPER, M. S. (Rose Polytechnic Institute) Houston st., between 6th. and 7th. streets	
Professor of Mechanical Engineering, Superintendent of Shops.	
EDWIN A. POPENOE, A. M. (Washburn).....	Seventh and Osage streets
Professor of Horticulture and Entomology, Superintendent of Orchards and Gardens.	
FRANK C. LOCKWOOD, Ph D (Northwestern).....	Fourth and Osage
Professor of English.	
BENJ. L. REMICK, Ph. M. (Cornell College).....	Fourth and Osage
Professor of Mathematics.	
BENJ. F. EYER	512 Houston street
Professor of Physics and Electrical Engineering.	
C. E. GOODELL, A. M. (Franklin).....	626 Houston street
Professor of History and Economics.	
SEPTIMUS Sisson, S. B. (Chicago), V. S. (Toronto).....	Cor. Manhattan avenue and Moro
Professor of Zoölogy.	
TAIT BUTLER, V. S. (Toronto)	
Professor of Veterinary Science.	
MISS HARRIET HOWELL, (Pratt Institute)	5 S. Juliette avenue
Superintendent of Domestic Art.	
JOSHUA D. RICKMAN, I. T. U.	911 Osage street
Superintendent of Printing.	
MISS JOSEPHINE T. BERRY, A. B. (Kansas University)	801 Poyntz avenue
Librarian.	
B. S. MCFARLAND, A. M. (Miami),.....	Fourth and Osage
Principal Preparatory Department.	
.....	
Director of Physical Training.	
MISS LORRENA E. CLEMONS, B. S. (K. S. A. C.), Secretary.....	Corner Fourth and Laramie
D. H. OTIS, M. S. (Kansas State Agricultural College).....	College Hill
Assistant Professor of Dairying.	
WILLIAM ARCH MCKEEVER, A. M. (Kansas University)	621 Houston street
Assistant Professor of English and Philosophy.	
MISS JOSEPHINE C. HARPER, Instructor in Mathematics.	Corner Sixth and Pierre streets
MISS ALICE RUPP, (Indiana State Normal), Instructor in English.	620 Houston street
CHARLES EASTMAN, Cadet Major and Acting Commandant	611 Poyntz avenue
William L. House, Foreman of Carpenter Shop.	Corner Sixth and Colorado
Chas. W. Pape, M. S. (K. S. A. C.), Ass't in Zoölogy and Ass'nt Curator Museum. 918 Osage st	
R. W. Clothier, M. S. (K. S. A. C.), Assistant in Chemistry. Fremont, between Fifth and Sixth	
Margaret J. Minis, Assistant Librarian.	Fourth and Moro streets
R. H. Brown, M. T. (Kan. Con. of Music), B. S. (K. S. A. C.), Ass't in Music. 817 Houston street	
J. M. Westgate, M. S. (K. S. A. C.), Assistant in Botany, Cor. Manhattan avenue and Vattier	
May Secrest, B. S. (K. S. A. C.), Assistant in Domestic Art, Cor. Leavenworth and Seventh	
Wm. Anderson, B. S. (K. S. A. C.), Assistant in Mathematics. Cor. Humboldt and Juliette ave	
Gertrude Barnes, Assistant Librarian.	Cor. 9th and Moro
Albert Dickens, B. S. (K. S. A. C.), Assistant in Horticulture, Fremont and Manhattan avenue	
William Baxter, Foreman of Greenhouses	
J. G. Haney, B. S. (K. S. A. C.), Ass't in Feeding and Field Experiments, Manhattan ave and Kearney	
Mary Pritner, B. S. (K. S. A. C.), Assistant in Domestic Science	Cor. 7th and Leavenworth
Theodore Lindquist, M. S. (Northwestern), Ass't Physics	Cor. Fifth and Humboldt
W. M. Sawdon, B. S. (Purdue), Assistant in Mechanics	Juliette and Houston
O. I. Purdy, B. S. (K. S. A. C.), Assistant in Printing	1216 Fremont street
Ada Rice, B. S. (K. S. A. C.), Assistant in Preparatory Department	Osage and 8th. street
Louis Wabnitz, Foreman Iron Shops.	5th and Osage
Henry Van Leeuwen, (Univ. Wis. D. S.) Inst'r in Cheese Making	Manhattan and Kearney
E. W. Curtis, (Univ. Wis. D. S.) Instructor in Butter Making	
Florence L. Grant (Mass. Normal Art School), Assistant in Drawing	Fourth and Osage
A. T. Kinsley, B. S. (K. S. A. C.), Assistant Veterinary Department, Tenth and Kearney sts	
Elizabeth Agnew, B. S. (K. S. A. C.), Assistant in Domestic Science, Ninth and Moro streets	
Jesse B. Norton, B. S. (K. S. A. C.), Assistant in Entomology.....	
E. C. Gasser, Foreman of Foundry and Blacksmith Shop	
Ina E. Holroyd, B. S. (K. S. A. C.), Assistant in Preparatory Department	Cor. Tenth and Kearney
Jacob Lund, M. S. (K. S. A. C.), Engineer.....	Corner Colorado and Fifth
C. Jeanette Perry, B. S. (K. S. A. C.), Executive Clerk.....	
Alice Melton, B. S. (K. S. A. C.), Clerk in Director's office.....	
W. R. Lewis, Janitor	N. E. corner Main College Building
Archie Huycke, Secretary to President.	Manhattan avenue and Kearney

THE INDUSTRIALIST.

VOL. 27.

MANHATTAN, KAN., JANUARY 22, 1901.

No. 15

LITERATURE ALONG DOMESTIC SCIENCE AND HOUSEHOLD ECONOMIC LINES.

REQUESTS from educational institutions and club women, as well as from city and rural homes, are frequently sent to the Department of Domestic Science asking for lists of books, etc., which properly come under the head of text-books, valuable reference books, both scientific and practical, in elementary, intermediate, and advanced work in the subjects usually classed under the head of domestic science, household economics and cookery. In fact, the Housekeeper's Library and Domestic Science in Contemporary Literature are subjects of great importance to all good home makers, since they afford a broad field of research for ordinary club work and reading circles. In this practical age every opportunity for benefiting the home should be seized upon, and reading-matter in the line above mentioned is sure to bring good results in the work of bettering general home conditions. The progressive teacher, as well as the thoroughly practical housekeeper, will find in the following list of books a vast amount of information in matters of expediency in domestic science, household economics, and cookery.

Since Chemistry, if practically understood, is invaluable to the successful home maker and successful teacher, we will first give the books under this head: The Chemistry of Cookery, by William Mattieu Williams. The Chemistry of Cookery and Cleaning, by Ellen H. Richards, and S. Maria Elliott. Chemistry of Wheat, Flour and Bread and Technology of Bread Making, by William Jago. The Chemistry of Bread Making, by Chas. Graham. Chemistry and Economy of Food, by W. O. Atwater, Ph. D. United States Department of Agriculture Bulletin No. 21, 1895. The Chemical Composition of American Food Materials by W. O. Atwater, Ph. D., and A. P. Bryant, M. S. United States Department of Agriculture Bulletin No. 28, Revised Edition, 1899. Chemistry of Daily Life, by Lasser-Cohn.

For reference books, as well as text-books, Remsen's Organic Chemistry and Inorganic Chemistry are very helpful. Next of importance pertaining to foods are the books by standard authors and the bulletins of the United States Department of Agriculture, viz: Foods, Composition and Analysis, by A. W. Blyth. Food and its Functions, by James Knight. Food Manuals and Health, by Albert J. Bernays. Food Analysis and Adulteration, by James Bell. Food, by A. H. Church, London. Food, Its Adulteration and the Methods of their Detection, by Arthur Hill Hassall. The Application of Science to the Production and Consumption of Food, by Edward Atkinson. Food and Dietaries, by R. W. Burnett, M. D. The Food Products of the World, by Dr. Mary Green. Food and Diet, by W. O. Atwater, Ph. D. Food and Dietetics, by F. W. Pavy. Food and Feeding, by Sir Henry Thompson, London. The International Health Exhibition Hand-books on Foods, etc., London. Food, by Edward Smith. Food Materials and Their Adulterations, by Ellen H. Richards. Food in Health and Disease, by I. Burney Yeo. Foods, Nutritive Value and Cost, Farmers' Bulletin No. 28, United States Department of Agriculture. The Cost of Living, by Ellen H. Richards.

In many excellent works upon food and dietetics the space devoted to the practical applications of diet in disease are comparatively insignificant, while in other works the directions are so vague that the diet must indeed be very general if their system is carried out. W. Gilman Thompson, M. D., has prepared one of the most valuable general diet treatise on practical dietetics now published. The book may be used to great advantage as a text-book in medical schools and in training schools for nurses, as well as a special reference book for teachers of domestic science in therapeutic cooking. Dr. J. H. Kellogg's works on the health principles and dietetics are the latest, and by far the most scientific, practical and reliable regarding vegetarian diet. These books may be had by addressing J. H. Kellogg, Battle Creek, Mich., care of Sanitarium. The Hand-book of Invalid Cookery, by Mary C. Boland, and Diet in Sickness and Health, by Mrs. Ernest Hart, are also helpful in invalid cookery. The following Miscellaneous books are important for reference books in practical demonstration and lecture work, as well as for practise work in domestic science and household economics:

The Science of Nutrition, by Edward Atkinson Dietetic

Value of Bread, by G. J. Goodfellow. Practical Sanitary and Economic Cooking, by Mrs. Mary Hinman Abel. How to feed children, by Louise E. Hogan. The Young Housekeeper, and Home Economics, by Marie Parloa. Hand-book of Household Arts and Domestic Science, by Wilson. Hand-book of Household Science, Youmans. The Story of Bacteria, by T. Mitchell Prudden. The Story of Germ Life, by Conn. Physiological Chemistry, by Novy. Science of Chemical Physiology, by Halliburton. Housework and Domestic Economy, by M. E. Haddon. Manual of Lessons in Domestic Economy, by G. H. Mayor. Hand-book of Sanitary Information, Roger S. Tracy, M. D. Eating and Drinking, Albert J. Hoy, M. D. How to Drain a House, by George H. Waring. Home Sanitation, by Ellen H. Richards and Marion Talbot. Household Economics, by Mrs. Helen Campbell. Dust and its Dangers, by T. Mitchell Prudden. The Expert Cleaner, by A. J. Seaman. Emergency Notes, Glentworth R. Butler, A. M., M. D. Fruits and How to Use Them, by Hester M. Poole. Elementary Laundry Work, by F. L. Calder and E. E. Mann. Laundry Manual, by L. Ray Balderston and M. C. Limerick. Every Day Dishes, and Science in the Kitchen, by Mrs. E. E. Kellogg, A. M. The Expert Waitress, by Anna C. Springsteed. The Waitress' Manual, by Forest Cozart. Heating and Ventilating Buildings, by Carpenter. Water Analysis, Dr. E. Frankland. Water Supplies, Chemical and Sanitary, by Riply Nichols. Water Supplies, William P. Mason. Water and Water Supplies, by John C. Thresh. Water and Ice, by T. Mitchell Prudden. What the Grocers Sell Us, by P. H. Felker. Cocoa and Chocolate, by Walter Baker and Company, Dorchester, Mass. Coffee and Tea, by G. V. Poore, London. One Thousand American Fungi, by Charles McIlvaine.

Many more books might have been included in the foregoing; however, an adequate number of the most important have been mentioned. Other resources of equal worth are found in our publication from the United States Department of Agriculture. First, from the Bureau of Animal Industry, United States Department of Agriculture, Bulletin No. 19, The Inspection of Meats for Animal Parasites, by Dr. D. E. Salmon, 1898. Also the following bulletins from the United States Department of Agriculture, Office of Experiment Stations, Washington, D. C.: No. 34, Carbohydrates of Wheat, Maize, Flour, and Bread. No. 69, Experi-

ments on Metabolism of Matter and Energy in the Human Body, by W. O. Atwater. Ph. D., and F. G. Benedict, Ph. D., 1899. No. 67, Studies on Bread and Bread Making, by Harry Snyder, B. S., and L. A. Voorhees, M. A., 1899. No. 85, A Report of Investigations on the Digestability and Nutritive and Economic Value of Bread, by Chas. D. Woods, and L. H. Merrill, 1900. Farmers' Bulletins: No. 112, Bread and the Principles of Bread Making, by Helen Atwater, 1900. No. 68, A Description of some Chinese Food Materials and their Nutritive and Economic Value, by Walter Blasdale, 1899. No. 43, Losses in Boiling Vegetables, and the Composition and Digestibility of Potatoes and Eggs, by H. Snyder, B. S., Alma J. Frisby, M. D., and A. P. Bryant, M. S. No. 68, Physiological Effects of Creatin Creatinin and Their Value as Nutrients, by J. W. Mallett, M. D., LL. D., 1899.

Suggestions Regarding the Cooking of Food, by Edward Atkinson, with Introductory Statements Regarding the Nutritive Value of Common Food Materials, by Ellen H. Richards, 1894.

The North Carolina Agricultural Experiment Station Special Bulletins: No. 59, Food Adulterations in North Carolina, by W. A. Withers. No. 161, Drinking Water; City, Town, and Rural Supplies, by A. N. Blair. No. 155, Baking Powders, by W. A. Withers and A. J. Bizzell. No. 166, Butter, by W. A. Withers and J. M. Pickel. No. 156, The Adulteration of Flour, by W. A. Withers and G. S. Fraps. No. 154, The Adulteration of Tea and Coffee.

United States Department of Agriculture: A report from the Year-book of the Department of Agriculture for 1897, Foods for Man.

Vermont Agricultural Experiment Station: Bulletin No. 54, Salad Plants and Plant Salads, 1896.

Bulletins from United States Department of Agriculture: No. 5, Fig Culture, by Gustav Eisen, 1897. No. 15, Some Edible and Poisonous Fungi, by Dr. W. G. Farlow, 1898. No. 45, Analysis of Cereals Collected at the World's Columbian Exhibition, and Composition, with their Data, by Harvey W. Wiley, 1895. No. 17, Suggestions for the Establishment of Food. Also circular No. 43, Food Nutrients; Food Economy. Food Laboratories in Connection with Agricultural Experiment Stations, by Edward Atkinson, 1893. Report from the Year-book of the United States Department of Agriculture for 1897, The Utilization of By-products from the Dairy, by Henry E. Alvord, C. E. Bulletin No. 63, Proteids

of Wheat Flour, Composition of Tomatoes, Miscellaneous Analysis. University of Minnesota Experiment Station.

Maine Agricultural Experiment Station: Bulletin No. 54, Nuts as Food, 1898. Bulletin No. 55, Cereal Breakfast Foods, 1898.

Farmers' Bulletins, United States Department of Agriculture: No. 78, Grape Juice and Sweet Cider, etc. No. 84, Potatoes; Food for Man, etc. No. 114, Skim-milk for Bread Making, etc. No. 87, Food Value of Eggs; Starch from Sweet Potatoes, etc. No. 107, Killing Germs of Tuberculosis in Milk; Dairy Salt, etc. No. 121, Beans, Peas, and other Legumes as Food. No. 25, Peanuts; Culture and Uses. No. 53, How to Grow Mush-rooms. No. 25, Sweet Potatoes, Culture and Uses. No. 62, Marketing Farm Products. No. 42, Facts about Milk. No. 57, Butter Making on the Farm. No. 74, Milk as Food. No. 63, Care of Milk on the Farm. No. 29, Souring of Milk, and other changes in Milk Products. No. 9, Ferments and their Relation to Dairying. No. 23, Foods; Nutritive Value and Costs. No. 34, Meats, Composition and Cooking. No. 103, Preserving Eggs. No. 73, Cooking Vegetables; Pure water; Use of Low-grade Apples, etc. No. 76, Tomato Growing. No. 65, Starch in Potatoes, etc. No. 122, The Workings of a Pure-Food Law; Flavor of Eggs; Coffee Substitutes; Nuts as Food; Olives; Unfermented Grape Juice. No. 92, Pasteurization in Butter Making, etc. No. 69, Kitchen and Table Wastes, etc. No. 79, Mush-rooms as Food; Sugar Beet Industry. No. 105, The Cereal Breakfast Foods; Food Value of Stone Fruits, etc. No. 85, Fish as Food. No. 93, Sugar as Food.

We cannot place too high an estimate upon the value of the United States Department of Agriculture, its Bulletins, etc., and upon the work of the department in general. Every man, woman and child in America receives the benefits of its activities though they may never have heard of its existence and know nothing of the privileges it extends to our scientific and practical investigators. The various divisions offer a wide scope for investigation and research in their several lines, thus classifying the most exact and reliable information. In connection with experiment stations the Department of Agriculture is studying the effects of food on human nutrition with a view to the most satisfactory and economic use of food supplies available for our people. The Division of Chemistry is studying the composition of foods with special reference to their adulteration, etc., and under this head

is at present calling upon Congress to enact a pure-food bill for the better protection of all our consumers against fraud.

A complete set of the bulletins mentioned should be found in every town library, as well as in our manual training high school and various college libraries. The presidents of the various women's clubs may find it an advantage to their home departments to have the bulletins of most aid to their particular line of work included in the catalogue of their town library or circulating library or to procure a list for their rest reading rooms. Teachers of domestic science will find them excellent to use in parallel readings with chemistry of cookery, chemistry of foods, etc. From the number given one may select the publications they desire. A very large number of these bulletins may be had for the asking; the other publications may be secured at the cost of publishing. We hope that our housekeepers and teachers of domestic science will avail themselves of the opportunities the United States Department of Agriculture affords for their enlightenment.

In regard to magazines, the *American Kitchen Magazine* and the *Boston Cooking School Magazines* are thoroughly up-to-date and should be found in every town, manual training, high school, and college library. In fact, they should be in every home. *Good Housekeeping*, *Table Talk*, *The Dietetic and Hygienic Gazette* and *Good Health* are also helpful to housekeepers and teachers.

"As the family is the heart of the country's life and every philanthropist and reformer must begin at that point; whatever then will enlighten the mind and lighten the burden of care of every housekeeper will be a boon." Then, too, whatever will make the work of the teacher more thorough, systematic and practical should be sought for in all classes of educational work.

MINNIE AVA NELLIE STONER.

Assistant R. W. Clothier is sending out to Kansas feeders a thousand blank reports to get facts concerning their methods of feeding steers, in order to compare the rations fed in the different feed lots with those of Professor Woolf's standards. A large amount of additional useful information is expected to be obtained. It should be added that this investigation is personal work by the assistant, and not paid for or ordered by the Experiment Station.

THE INDUSTRIALIST.

Published weekly during the College year by the
Printing Department of the

KANSAS STATE AGRICULTURAL COLLEGE. Manhattan, Kansas.

☆ ☆ ☆

PRES. E. R. NICHOLS.....Editor-in-Chief
PROF. J. D. WALTERS.....Local Editor
PROF. J. T. WILLARD.....Alumni Editor

BOARD OF REGENTS.

HON. E. T. FAIRCHILD, President.... Ellsworth
HON. J. S. McDOWELL, Vice-President,
Smith Center
HON. W. T. YOE, Treasurer..... Independence
HON. WM. HUNTER, Loan Comm'r, Blue Rapids
HON. MRS. SUSAN J. ST. JOHN..... Olathe
HON. CARL VROOMAN..... Parsons
HON. J. M. SATTERTHWAITE..... Douglass

PRES. E. R. NICHOLS, Sec. *ex-officio*.

LOCAL NOTES.

We notice that the *Douglass Tribune*, published by Regent J. M. Satterthwaite, is now the official paper of Butler county.

Professor and Mrs. Metcalf and their student assistants will give a "Metcalf Recital" at Mariadahl Friday evening, February 8.

The Board of Regents, at their meeting week before last, elected Miss Gertrude Williams, of Milwaukee, Wis., teacher of calisthenics.

The dairy school churned six hundred pounds of butter last Tuesday. The weekly output amounts to something over fifteen hundred pounds.

Manhattan has hopes of a new depot now that the Union Pacific company contemplates spending \$1,000,000 for improvements on its Kansas division.—*Kansas City World*.

Professor E. M. Wood, of Baker University, visited chapel and led in prayer on Tuesday last. Professor Weida escorted him through College and showed him the sights.

Professor Roberts, of Illinois State University, will deliver his famous lecture on liquid air, and illustrate it with many interesting experiments, at the opera-house, in Manhattan, on January 28.

Assistant Haney, of the Farm Department, has built two large sheds for the blooded cattle, and started last Saturday to gather up the animals that were donated to the College, as reported last week.

The Riley County Educational Association met at Randolph, January 19. The program included seven papers, several music pieces, a basket dinner, and a lecture by Rev. R. E. Rosenstein, of Manhattan, on "The Origin of an Ideal."

The improvised chemical laboratory in the dairy barn is filled to overflowing. One hundred sixty students are assigned to chemical practice in that "temple of science." However, another year will give us new and suitable quarters.

Governor Stanley has transmitted to the legislature a message calling attention to the fact that the State would have to accept the Fort Hays reservation and make an agricultural experiment station of it, or allow it to go back to the government.

The Farm Department feeds a herd of thirty calves on skim-milk. Part of these are fed corn-meal and part whole corn. Those having whole corn are making much the most gains. For this class of stock it will not only not pay farmers to grind but he will loose money by grinding.

Assistant R. W. Clothier, of the Chemical Department, has commenced the analyzing of the corn of this year's crop as a continuation of last year's work in seed breeding. He expects to analyze about one hundred fifty samples. This work will occupy all his time not given to class instruction for at least two months.

The American Aberdeen Angus Association has donated the Farm Department volumes 8, 9 and 10 of their herd book. The American Hereford Association mails the Farm Department regularly their herd books free as soon as they are issued. The American Shorthorn Association, however, charges the College three dollars per volume.

The State Board of Agriculture, in session at Topeka, honored K. S. A. C. professors with the following appointments: Botanist, Prof. A. S. Hitchcock; chemist, Prof. J. T. Willard; entomologist, Prof. E. A. Popenoe; honorary veterinarian, Dr. Tait Butler. With the exception of Doctor Butler the professors were all simply reelected from last year.

Prof. A. B. Brown has received a letter from his son Allie, of the U. S. Army in the Philippines, saying that he had been in the hospital for some time and that he would sail from the islands about December 22. If it was possible for him to leave on that date, he is expected to arrive in San Francisco the latter part of this week or the first of next. Allie was a member of the Thirty-second U. S. Infantry band.

The Park Place dormitories are now finished and furnished and students are beginning to fill up the handsome rooms. Being incomplete at the beginning of the winter term, these buildings could not admit the host of students who applied for room and the disappointed parties found other lodging places for the season, but we predict that another term will find every room taken. The dormitories are in charge of Mr. and Mrs. H. J. Barnhouse, well and favorably known Manhattan people.

The monograph on "Higher Education in Kansas," edited by Prof. Frank W. Blackmar, of the State University, and published by the United States Bureau of Education, as Circular of Information No. 2, for 1900, is a neat volume of one hundred sixty pages, but as the matter was compiled in 1892 or '93, the statistics are old, incomplete, and useless. The Agricultural College has doubled its attendance and teaching force since that year; it has organized eight additional courses of study and erected four or five new buildings. Such information may be acceptable in the East, but it will not do for the West.

Prof. A. S. Hitchcock has received a call from the U. S. Department of Agriculture to the position of Assistant Chief of the Division of Agrostology, with a salary considerably larger than he gets at this College. The professor has not as yet accepted the proffered position, but his colleagues are afraid that he will do so. It is a pity that for want of funds the College should be in constant danger of losing its most experienced and best teachers. Some years ago Professor Van Deman, of the same department, left the institution for a position in Washington; half a dozen years later Professor Kellerman, of the same department, left for a professorship in Ohio State University; several assistants resigned at different times, and all, or nearly all, left simply because the College is unable to compete with other institutions in offering the inducements held out by other states.

The Olathe *Mirror* publishes a well-made photograph of Hon. Mrs. J. P. St. John, and adds the following character sketch: "Mrs. J. P. St. John, of Olathe, wife of the ex-governor, is a conspicuous example of woman in office. As a member of the Board of Regents of the State Agriculture College at Manhattan she has exerted a considerable influence and has accomplished many reforms that generations of girl students in that great institution in the future will rise up and bless her for. It is the ambition of Mrs. St. John's life to see a woman on every state board which has the management of institutions where women are admitted. This sentiment on her part is largely the result of her experience the past few years as a member of the Board of Regents, and her arguments are certainly convincing. Mrs. St. John is an exquisite in her home life and it is a blessing to society that such women occasionally help to shape the destinies of a great state."

One of the most valuable additions to Manhattan for a number of years past are the two modern dormitories just completed by C. P. Dewey. The buildings, situated as they are at the northeast corner of the city park, are admirably located both in regard to the College and the down-town district of the city. The dormitories are immense structures containing twenty-eight and thirty-three rooms respectively, and were built at a cost of about \$10,000 each. The north one is intended for ladies only and the south one for gentlemen. In the north building is an elegantly furnished reception room and library. In the basement of the south building is the kitchen and dining-room. The buildings are heated by steam and lighted by electricity, and without exception offer the most desirable apartments in the city to students. While here last week the Regents of the College visited Park Place dormitories and thoroughly inspected them. The entire Board offered Mr. Dewey their congratulations upon providing such comfortable quarters and placing them within the reach of the students. It is to be hoped that the dormitories will prove very popular with the students and that the demand for apartments in them will soon warrant Mr. Dewey to erect the third building, as was his original plan.—*Nationalist*.

A delegation of State representatives, piloted by Rep. Frank M. Emmons, of Riley county, and a committee of citizens of Manhattan, consisting of County Attorney Brock, Messrs. Wharton, Fielding, Smith, Jolly, Garrettson, and Winne, visited College on Saturday to ascertain its needs. They attended chapel in a body and feasted their eyes on the multitude of students in attendance. Speaker McKeever, of the House, and Representative Dougherty made short addresses assuring the friends of the College that they would carefully consider our wants and give us all that the budget would afford. After chapel they visited many of the classrooms and laboratories, and departed at noon, feeling that the College was doing its full duty toward the State. The delegation consisted of Hon. E. D. McKeever, of Shawnee county; Hon. J. S. Bean, of Saline county; Hon. Stephen E. Cave, of Haskell county; Hon. Robert Dougherty, of Harvey county; Hon. F. H. Dunham, of Lincoln county; Hon. Timothy Hacket, of Bourbon county; Hon. J. H. Hill, of Russell county; Hon. H. A. Nichols, of Woodson county; Hon. E. R. Watkins, of Reno county; and Hon. F. N. Woodward, of Republic county.

The College societies have elected their officers for the coming term and are now deep in work for the winter term. With the Ionians the following young ladies are in command: President, Katherine Winter; vice-president, Maude Sauble; recording secretary, Amelia Maelzer; corresponding secretary, Corinne Failyer; treasurer, Martha Briggs; marshal, Alice Perry; assistant marshal, Stella Fearon; president of board, Elsie Robinson; second member of board, Maude Coe. The Alpha Betas have placed the following at the helm of their ship of state: President, Adelaide Strite; vice-president, C. A. Gingery; recording secretary, C. H. Clark; corresponding secretary, Emma Miller; treasurer, M. E. Bacon; critic, Anna Summers; marshal, C. B. Swift; fifth member of board, Bessie Bourne; sixth member, W. R. Hildreth; seventh member, R. A. Esdon. With the "Webs." the officers for the coming term are recognized as follows: President, H. F. Butterfield; vice-president, H. H. Fay; recording secretary, P. H. Ross; corresponding secretary, E. R. Secrest; treasurer, N. S. Schmitz; critic, H. C. Turner; marshal, S. E. Morlan. Program committee: Chairman, H. N. Vinall; second member, Frank W. Boyd; third member, H. P. Schowalter; third member of board of directors, J. Tompkins. The Hamiltons elected D. M. Ladd, president; O. H. Elling, vice-president; W. DeArmond, recording secretary; Scott Wright, corresponding secretary; Perry Campbell, treasurer; H. McCaslin, critic; N. L. Towne, marshal; and Messrs. Doane, Wakefield, Wilson, Boyd and Henderson for board of directors.

The Kansas State Good Roads Association held a two day's session in Topeka last week. The meetings were in the nature of executive sessions of the delegates and directors of the association to discuss the availability of the bills which have been handed in to the legislative committee for their consideration.

The association has finally prepared a bill which they believe will stand the test of the courts. This bill will be introduced in both branches of the legislature. On Tuesday President Wright spoke of the history of the good-road movement and what had been accomplished and outlined what was intended to accomplish. W. R. Goit, of Lawrence, spoke on road drainage, taking the position that the time has not so far advanced that the farmers can afford to build macadam roads and that good road drainage should be substituted. President Nichols, of the State Agricultural College at Manhattan, spoke at some length of how to preserve good roads after once getting them. He said: "It is estimated that the public roads of the United States aggregate 1,500,000 miles in length. In round numbers the sum of \$20,000,000 is paid out each year for the maintenance of our public roads outside of the cities. This estimate does not include the cost of permanent improvements. Thus at the end of the year, after expending \$20,000,000, the roads of the country are in no better condition than they were the year before. The maintenance of our public highways is therefore a serious problem involving the expenditure of large sums of money, and all means for reducing this expense should be immediately adopted. It is on all sides admitted that narrow tires are among the most destructive agents to the streets, macadam, gravel, and dirt roads, and to the fields, meadows and pasture of the farms. The introduction in recent years of the wide tired metallic wheel at about the price usually paid for the ordinary narrow tired wheels has removed one very serious objection to the proposed substitution of broad tires for the narrow ones now in use."

The Fort Hays Reservation.

The following is the bill which was introduced in the Senate by W. A. Harris, and in the House by W. A. Reeder on December 5, 1899, and which has become a law.

A BILL granting to the State of Kansas the abandoned Fort Hays Military Reservation in said State, for the purpose of establishing an Experimental Station of the Kansas Agricultural College and a western branch of the Kansas State Normal School thereon, and a public park.

Be it Enacted—That the abandoned Fort Hays Reservation, and all improvements thereon, situated in the State of Kansas, be and the same is hereby granted to said State upon the conditions that said State shall establish and maintain perpetually thereon (1) an experimental station of the Kansas Agricultural College and (2) a western branch of the Kansas State Normal School, and that in connection therewith the said reservation shall be used and maintained as a public park: *Provided*, that said State shall, within five years from and after the passage of this act, accept this grant, and shall by proper legislative action establish on said reservation an experiment station of the Kansas Agricultural College, and a western branch of the Kansas State Normal School, and whenever the lands shall cease to be used by said State for the purposes herein mentioned the same shall revert to the United States: *Provided further*, that the provisions of this act shall not apply to any tract or tracts within the limits of said reservation to which valid claims has attached by settlement or otherwise under any public land laws of the United States.

This beautiful reservation has been inspected by the president and others of each institution. Of the 7600 acres, which the State gets by the passage of this bill, nearly 5400 acres are excellent lands. About 4000 acres is the best of wheat land, which might be rented at one-third to one-half the crop, bringing \$10,000 a year for the institutions. Water can be had easily by boring twenty to forty feet, and the best of water. There are fine white-rock quarries within a mile of the buildings, easy to get at and enough for all time. Most of the nineteen buildings are poor and dilapidated structures, but with a little repair they can be used for years. The land will be fine for the stock and agricultural experiments of the Agricultural College. The gift to the State is worth \$200,000. Hays City lies adjoining the reservation, with good stores and hotels and a long-distance telephone and electric-light systems in operation ready to extend to the college grounds when wanted; good railroad facilities with depot within a half-mile of the reservation buildings; good class of citizens and good society for children attending the school. Ellis county is near the center of the western half of the State; is within the rain belt, and raises all kinds of fruit, vegetables and farm products, and the best of cattle and hogs. Two and one-half million bushels of wheat was raised in 1899, and the same in 1900. The bill arranging for the acceptance of the reservation is now pending before the State legislature.



KITCHEN LABORATORY, DOMESTIC SCIENCE DEPARTMENT.

A DIGESTION EXPERIMENT WITH BUFFALO-GRASS HAY,

(Press Bulletin No. 79, issued from Chemical Department.)

The high reputation of buffalo-grass as a pasture for stock, even in its winter condition, gives a special interest to an experiment on its digestibility which has been performed by the Chemical Department of the Kansas Experiment Station. The experiment possesses additional interest because it is the first one of the kind to be recorded in reference to this important resource of the great plains. It being impracticable to investigate the fresh grass in this respect, its conversion into hay presented the first problem for solution. Our sample is probably the only buffalo-grass hay ever made. This was obtained, after some experimentation with other means, by several days of hard work with a lawn-mower. About three hundred pounds were prepared near Oakley, Logan county, and shipped to the Station.

Its digestibility was tried with a grade Shorthorn steer. The animal would not eat the hay at first at all, but by mixing alfalfa with it, and reducing its proportion gradually, the steer was gotten upon the pure buffalo-grass hay in about six days. After this he was kept on the buffalo-grass hay alone for five days as a preliminary feeding to free his digestive tract from all other feed, and then he was fed for five days more, which constituted the digestion experiment proper. During this time an accurate account was kept of the hay fed, and the amount uneaten. The dung was collected by watchers who were with him at all times. The original hay, the uneaten residues, and the dung were carefully sampled and analyzed as usual. The following table exhibits the results:

TABLE OF RESULTS IN DIGESTION OF BUFFALO-GRASS HAY, CALCULATED TO A WATER-FREE BASIS.

	Ash.....	Crude Protein.	Fiber.....	Nitrogen-free Extract	Fat.....	Totals....
PERCENTAGE COMPOSITION.						
Hay fed.....	13.2	12.3	26.2	46.1	2.2	100
Hay uneaten.....	15.2	12.0	25.3	45.4	2.1	100
Dung.....	25.7	12.4	20.5	38.8	2.6	100
POUNDS; FIVE DAYS' FEEDING.						
In hay fed.....	10.6	9.9	21.0	36.9	1.7	80.1
In hay uneaten.....	3.1	2.4	5.2	9.3	0.4	20.4
In hay eaten.....	7.5	7.4	15.9	27.6	1.3	59.7
In dung.....	7.0	3.4	5.6	10.6	0.5	27.1
In hay digested.....	0.5	4.0	10.2	17.1	0.8	32.6
PERCENTAGE DIGESTIBLE.						
In hay eaten.....	0.8	6.8	17.2	28.5	1.4	54.7
PERCENTAGE OF EACH NUTRIENT DIGESTIBLE, OR COEFFICIENT OF DIGESTIBILITY.						
Each nutrient.....	6.0	54.4	64.7	61.8	62.4	54.7

The most noticeable feature of the above results is the high percentage of digestible proteids which this hay contains. In this respect it is considerably superior to Kentucky blue-grass and very much better than timothy. It has about the same amount of digestible carbohydrates and fat as these grasses, but because of its higher percentage of protein, furnishes a better balanced ration. This valuable grass is worthy of most careful protection.

J. T. WILLARD.

KANSAS STATE AGRICULTURAL COLLEGE

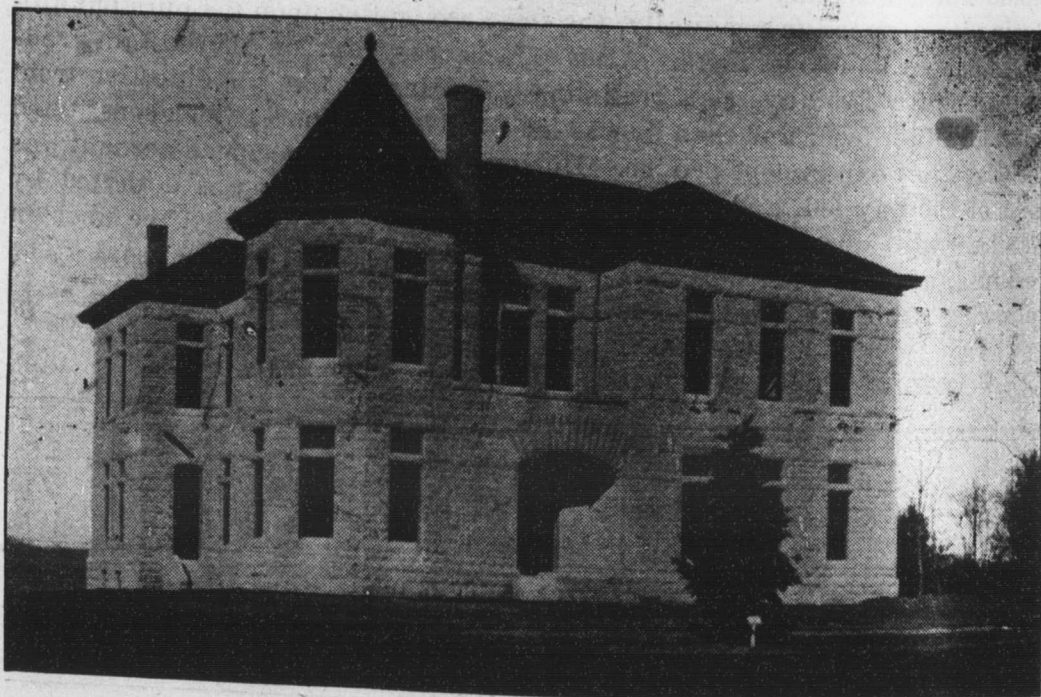
FIVE COURSES OF STUDY.....

Each complete in itself and leading to the degree of Bachelor of Science, are as follows:

- 1—General Science
- 2—Agriculture
- 3—Domestic Science
- 4—Mechanical Engineering
- 5—Electrical Engineering

This Institution

is supported by the General Government and by the State of Kansas, and is designed, by its instruction, to promote the liberal and practical education of the industrial classes in the several pursuits of life.



COLLEGE classes are open to both sexes. Tuition is free in all departments. There is no charge for laboratory supplies. Room and board can be had at very reasonable rates. The yearly expenses, exclusive of clothes and traveling expenses, are between \$100 and \$200. All College laboratories, shops and class rooms are well supplied with needful apparatus and appliances. Practical application is made of the principles learned in the study of the sciences, and thus the College is made a school of applied science.

Domestic Science.

A full course in Domestic Science now in successful operation. The work in the Department of Domestic Science forms an interesting part of the instruction given in the women's course. It is of great practical and disciplinary value.

FOUR SHORT COURSES

Open to students of mature age who cannot, on account of time or money, take one of the four-year courses.

- 1—Apprentice
- 2—Domestic Science
- 3—Dairying
- 4—Agricultural

For catalogue or other information, address

**ERNEST R. NICHOLS, A. M., PRES.,
MANHATTAN, KANSAS.**

Volume 27.

Number 16.

THE INDUSTRIALIST

ISSUED WEEKLY

KANSAS STATE
AGRICULTURAL COLLEGE

☆ ☆

Editor-in-Chief, *Pres. E. R. Nichols*
Local Editor, *Prof. J. D. Walters*
Alumni and Former Students, *Prof. J. T. Willard*

☆ ☆ ☆

Published by
PRINTING DEPARTMENT
J. D. Rickman, Supt.

Entered at post-office, Man-
hattan, Kan., as second-class
matter. Act of July 16, 1894.

BOARD OF INSTRUCTION.

ERNEST R. NICHOLS, A. M. (University of Iowa), President.....	631 Poyntz avenue
JOHN D. WALTERS, M. S. (Kansas State Agricultural College)	North end of Sixth street
Professor of Industrial Art and Designing.	
ALEXANDER B. BROWN , (Boston Music School), A. M. (Olivet)	817 Houston street
Professor of Music.	
JULIUS T. WILLARD, M. S. (Kansas State Agricultural College).....	1211 Moro street
Professor of Applied Chemistry.	
ALBERT S. HITCHCOCK, M. S. (Iowa Agricultural College) ..	College Hill, 2 miles N. W. of College
Professor of Botany.	
FREDRIC A. METCALF, O. M. Superioris Honoris (Emerson Coll. Oratory) 728 Poyntz avenue	
Professor of Oratory.	
GEORGE F. WEIDA, Ph. D. (Johns Hopkins).....	517 Fremont street
Professor of Pure Chemistry.	
HENRY M. COTTRELL, M. S. (Kansas State Agricultural College).....	College Campus
Professor of Agriculture, Superintendent of Farm.	
MISS MINNIE AVA NELLIE STONER , (Boston N. S. of H. A.), B. S. (S. D. A. C.) 5 S. Juliette ave	
Professor of Domestic Science, Dean of Women's Department.	
JOSEPH D. HARPER, M. S. (Rose Polytechnic Institute) Houston st., between 6th. and 7th. streets	
Professor of Mechanical Engineering, Superintendent of Shops.	
EDWIN A. POPENOE, A. M. (Washburn).....	Seventh and Osage streets
Professor of Horticulture and Entomology, Superintendent of Orchards and Gardens.	
FRANK C. LOCKWOOD, Ph. D. (Northwestern).....	Fourth and Osage
Professor of English.	
BENJ. L. REMICK, Ph. M. (Cornell College).....	Fourth and Osage
Professor of Mathematics.	
BENJ. F. EYER	512 Houston street
Professor of Physics and Electrical Engineering.	
C. E. GOODSELL, A. M. (Franklin).....	626 Houston street
Professor of History and Economics.	
SEPTIMUS SISSON, S. B. (Chicago), V. S. (Toronto).....	Cor. Manhattan avenue and Moro
Professor of Zoölogy.	
TAIT BUTLER, V. S. (Toronto)	_____
Professor of Veterinary Science.	
MISS HARRIET HOWELL , (Pratt Institute).....	5 S. Juliette avenue
Superintendent of Domestic Art.	
JOSHUA D. RICKMAN, I. T. U.	911 Osage street
Superintendent of Printing.	
MISS JOSEPHINE T. BERRY, A. B. (Kansas University)	801 Poyntz avenue
Librarian.	
B. S. MCFARLAND, A. M. (Miami)	415 Pierre street
Principal Preparatory Department.	
MISS GERTRUDE WILLIAMS	_____
Director of Physical Training.	
MISS LORENA E. CLEMONS, B. S. (K. S. A. C.), Secretary.....	Corner Fourth and Laramie
D. H. OTIS, M. S. (Kansas State Agricultural College).....	College Hill
Assistant Professor of Dairying.	
WILLIAM ARCH MCKEEVER, A. M. (Kansas University)	621 Houston street
Assistant Professor of English and Philosophy.	
MISS JOSEPHINE C. HARPER, Instructor in Mathematics.....	Corner Sixth and Pierre streets
MISS ALICE RUPP , (Indiana State Normal), Instructor in English.....	620 Houston street
CHARLES EASTMAN , Cadet Major and Acting Commandant	611 Poyntz avenue
William L. House , Foreman of Carpenter Shop.....	Corner Sixth and Colorado
Chas. W. Pape, M. S. (K. S. A. C.), Ass't in Zoölogy and Ass't Curator Museum ..	918 Osage st
R. W. Clothier, M. S. (K. S. A. C.), Assistant in Chemistry. Fremont, between Fifth and Sixth	
Margaret J. Minis , Assistant Librarian.....	Fourth and Moro streets
R. H. Brown, M. T. (Kan. Con. of Music), B. S. (K. S. A. C.), Ass't in Music. 817 Houston street	
J. M. Westgate, M. S. (K. S. A. C.), Assistant in Botany, Cor. Manhattan avenue and Vattier	
May Secret, B. S. (K. S. A. C.), Assistant in Domestic Art, Cor. Leavenworth and Seventh	
Wm. Anderson, B. S. (K. S. A. C.), Assistant in Mathematics. Cor. Humboldt and Juliette ave	
Gertrude Barnes , Assistant Librarian.....	Cor. 9th and Moro
Albert Dickens, B. S. (K. S. A. C.), Assistant in Horticulture, Fremont and Manhattan avenue	
William Baxter , Foreman of Greenhouses	_____
J. G. Haney, B. S. (K. S. A. C.), Ass't in Feeding and Field Experiments, Manhattan ave and Kearney	
Mary Pritner, B. S. (K. S. A. C.), Assistant in Domestic Science	Cor. 7th and Leavenworth
Theodore Lindquist, M. S. (Northwestern), Ass't Physics	Cor. Fifth and Humboldt
W. M. Sawdon, B. S. (Purdue), Assistant in Mechanics.....	Juliette and Houston
O. I. Purdy, B. S. (K. S. A. C.), Assistant in Printing.....	1216 Fremont street
Ada Rice, B. S. (K. S. A. C.), Assistant in Preparatory Department.....	Osage and 8th. street
Louis Wabnitz , Foreman Iron Shops.....	5th and Osage
Henry Van Leeuwen , (Univ. Wis. D. S.) Inst'r in Cheese Making	Manhattan and Kearney
E. W. Curtis , (Univ. Wis. D. S.) Instructor in Butter Making	_____
Florence L. Grant (Mass. Normal Art School), Assistant in Drawing ...	Fourth and Osage
A. T. Kinsley, B. S. (K. S. A. C.), Assistant Veterinary Department, Tenth and Kearney sts	
Elizabeth Agnew, B. S. (K. S. A. C.), Assistant in Domestic Science, Ninth and Moro streets	
Jesse B. Norton, B. S. (K. S. A. C.), Assistant in Entomology.....	_____
E. C. Gasser , Foreman of Foundry and Blacksmith Shop	_____
Ina E. Holroyd, B. S. (K. S. A. C.), Assistant in Preparatory Department	_____
Jacob Lund, M. S. (K. S. A. C.), Engineer.....	Cor. Tenth and Kearney
G. Jeanette Perry, B. S. (K. S. A. C.), Executive Clerk.....	Corner Colorado and Fifth
Alice Melton, B. S. (K. S. A. C.), Clerk in Director's office.....	_____
W. R. Lewis, Janitor	N. E. corner Main College Building
Archie Huycke , Secretary to President.....	Manhattan avenue and Kearney

THE INDUSTRIALIST.

VOL. 27.

MANHATTAN, KAN., JANUARY 29, 1901.

No. 16

THE PRINTING DEPARTMENT.

THE Printing Department, like all other departments about College, has been increasing in usefulness, both to the students and the College. For some time past all press bulletins issued by the Experiment Station Council have been printed and mailed from this department at a greatly reduced cost. Until two years ago all press bulletins were printed away from College, the mailing was done by hand, and the expense was large. Now, with the "Horton" mailer, the mailing is cheapened and the time required greatly shortened.

The work of the department is all done with student labor, and the monthly student pay-roll will average in the neighborhood of \$75 per month. Besides attending to the bulletins, the *INDUSTRIALIST* and *Students' Herald* are published weekly, a large volume of other College work is done, such as assignments and stubs, grade sheets, posters and programs for farmers' institutes, the various forms of blanks used by the different departments, and the hundred and one "odds and ends" that are continually coming up.

In the execution of this vast amount of work two features are brought into prominence, viz., the practical experience and training the students in the department are receiving and the cheapening of the work to the College. Students, while working outside of class hours, get the regulation College price of ten cents per hour. Though the student is working for pay he is receiving that much more instruction, so that the work serves a double purpose with him. After the student acquires sufficient proficiency by class-work instruction he is given work for pay. Many students are earning their way through College, and it is always the aim of the department to favor this class of students if proficient. We have found that this class has given better satisfaction, for they have come here to get an education, and we are

firmly convinced that the students who go to classes during forenoon hours, work every vacant afternoon and get their lessons at night are the ones who are here for a purpose and are willing to put forth every energy to accomplish it. This class of students are rarely seen loitering in the halls or loafing on the streets. Some are working even too hard, receiving too little enjoyment and recreation. Many will reap their reward later.

It is a deplorable fact that many students expect their diplomas to carry them through this world "on a bed of ease." The College graduate should realize that when he leaves College he will have to compete with uneducated, untrained hands and minds, and that he must place himself on a level with them, so far as competing for places is concerned, but that after he has secured a position and had a chance to apply his college training his chance of advancement is ten-fold that of the untrained mind and unskilled hand.

Another deplorable mistake made by many is, that when one starts out on small wages they think they must earn just that much and no more. They say they are not going to earn two dollars per day when they are only paid one. This is the greatest mistake one can make. If you only earn one dollar per day, how will your employer ever know you are worth more? If you are not satisfied with your job and the compensation, do the best you can and be looking for another job, and when a better opening is presented your employer and fellow workmen can recommend you. How would you like your employer to give you a recommendation like this: Mr. Blank has worked for me the past six months but got tired of his job and quit. He has been receiving \$1.50 per day but informs me he can earn twice that much if he can find an employer who will pay it. He has never shown any inclination to do his best, so I know not what his capacity is. Really, he and I differ. He thinks he has been earning his \$1.50 per day, but I have men who have been doing much more for the same money, and I intend raising their wages.

If you accept a job at any price, always do your best, and you will find out, may be not for years, that you have been making for yourself a record which will go with you through life—one you will always be proud of. Above all things, always attempt to do your work as the employer or foreman tells you to do. Never suggest a better way. The person directing the work generally knows how he wants it, and ten chances to one knows more about

the work than you do. At least he knows how he wants it, and he is the person to be pleased—his money pays for the job.

Do not think you can carry on a conversation or entertain your callers and do justice to your employer. While your mind is on your conversation it is not on your work. When you hire out to a person your time belongs to that person, and not to yourself, and you should use it to his benefit.

The Printing Department is attempting to train the industrial students along these lines. We have been out in the cold world these many years and have learned many valuable lessons in the sad school of experience.

The department is not as well equipped as we would like, but the student may learn the rudiments of printing and we trust receive some valuable instruction. The equipment was placed some fifteen years ago. The presses have been broken and repaired and the type handled by unskilled labor until they have seen their best days. When comparing our work with modern-equipped offices this should be taken into consideration, as well as the fact that our work is all done by students—practically kindergartners at the trade.

J. D. RICKMAN.

THE DOMESTIC SCIENCE FOOD EXHIBIT.

LAST fall term the two food exhibits of the Domestic Science Department proved to be very instructive, attractive and interesting to all those who investigated them. Although such work is quite an innovation in the department here, yet the conditions seemed to demand that for the two occasions, namely, the Hutchinson excursion and the State Grange Association, some special demonstration of our regular College work be made.

In order to give all the classes—short-course and College classes—an opportunity to have a part in the exhibit, the products of the practice work in cooking for the week were reserved for the display in our kitchen cabinets. The first exhibit included plain desserts, pastry, breakfast cereals, luncheon dishes and fruit cookery. The second exhibit included yeast, yeast breads, baking-powder breads, fruit-cake, plain layer and loaf cakes. The accompanying cut gives a very good representation of the second exhibit. The general arrangements and plans were car-

ried out by the postgraduate students, thus giving them the experience in carrying on the details of an exhibit. This work had been such a success that as occasions demand and means afford, the department will continue to give exhibits. Many of the



products of these exhibits were sold so that the extra expense was not taken from the department, aside from what was required in regular College class work.

Our Domestic Science Department is growing and expanding as its past history proves, and we are happy to affirm that the words of commendation we have received from various parts of the State in regard to our work is justly deserved.

MINNIE AVA NELLIE STONER.

When Pres. E. R. Nichols, of the State Agricultural College, was assistant professor of mathematics in the Iowa State University, State Supt. Nelson was in his classes.—*Western School Journal*.

The Kansas Academy of Science held an adjourned meeting in Representative Hall, at Topeka, Friday evening. Prof. F. O. Marvin, of the State University, delivered a lecture on the water supply of Kansas cities.

SOME FAMILIAR ECONOMIC PLANTS.

(Continued from page 32.)

Buxus. Box Tree. Euphorbiaceæ. Cultivated for hedges. Wood used for small turned articles and scientific instruments. Native of Europe.

Calamus Rotang. Rattan Palm. Palmaceæ. This and other species used in making furniture. They are climbing palms of south Asia.

Callistephus. China Aster. Compositæ.

Calluna vulgaris. Heath. Ericaceæ. A low shrub covering large areas in some localities. This is the true heather of Scotland. Some species of *Erica* are also called heath. Natives of Europe.

Camellia. Ternstroemiaceæ. Ornamental shrubs from eastern Asia.

Campanula Medium. Canterbury bells. Campanulaceæ. Ornamental herb, native of Europe.

Canna. Indian shot. Scitamineæ. Used for lawn decoration. Mostly from tropical America.

Cannabis sativa. Hemp. Urticaceæ. Fiber of stem used for cordage. Native of southern Asia.

Capparis spinosa. Capers. Capparidaceæ. Flower buds or unripe fruit pickled in vinegar. South Europe.

Capsicum annuum. Red pepper. Solanaceæ. The fruits of this and other species are dried and ground, the powder being used as a spice. The fruits are also pickled. Called cayenne pepper and chillies. Native of South America.

Caragana arborescens. Pea tree. Leguminosæ. Ornamental shrub from Siberia.

Cardamon. Seeds of various plants of the ginger family, such as *Amomum Cardamomum*, used as a spice and drug.

Cardiospermum Halicacabum. Balloon vine. Sapindaceæ.

Carica Papaya. West Indian Papaw. Papayaceæ. A small palm-like tree with a soft almost herbaceous stem and milky juice. Leaves large, in a cluster at the top. Fruit globose or oblong, 6 to 10 inches long, yellow, with a thick flesh and interior cavity like a musk melon, which it somewhat resembles in taste. Native of tropical America.

Carum Carui. Caraway. Umbelliferæ. A European herb whose seed-like fruits are used for flavoring confectionery and pastry.

Carum Petroselinum. Parsley. Umbelliferæ. A European herb used chiefly as a table decoration.

Carya. Hickories. Juglandaceæ. Several species furnish edible nuts. The wood is also used for a variety of purposes. The big shellbark hickory is *Carya sulcata* the little shellbark, *C. alba*; the pecan, *C. olivaeformis*. All are natives of southeast Kansas and the southern states.

Caryophyllus aromaticus. Clove. Myrtaceæ. A small tree of the East Indies. The unopened flower buds are used as a spice. The four prongs are the calyx lobes. The flavor is an aromatic oil.

Cassia. Senna. Leguminosæ. The leaves of several species constitute the drug senna. Cassia buds used for spice are produced by the cinnamon tree and have no relation to the senna plant.

Castanea. Chestnut. Cupuliferæ. One species of Asia and Europe and a similiar species of the United States furnish lumber and edible nuts. The chestnut is cultivated in Europe for the nuts and superior varieties are propagated by grafting. The American nuts are mostly the wild product.

Catalpa. Bignoniaceæ. Several species cultivated for ornament and for the wood which makes excellent posts.

Celosia cristata. Cockscomb. Amarantaceæ. An ornamental herb, the common form of which has the flower branches developed in a form known as fasciation.

Celtis occidentalis. Hackberry. Urticaceæ.

Cercis. Redbud. Leguminosæ. *C. Canadensis* of the United States and other species of the Old World are used for ornament.

Cereus. Cactaceæ. *C. grandiflorus* is the night blooming cereus. *C. giganteus* is the peculiar tree cactus of the Arizona deserts.

Chenopodium. Chenopodiaceæ. Several species are common weeds. *C. Quinoa* is cultivated in western South America, for the seeds which form a staple food in that region. It was one of the staple foods of the ancient Incas.

Chrysanthemum. Compositæ. This includes also the Pyrethums, two of which furnish insect powder. This is produced from the dried flowers. *C. cinerariaefolium* grows wild in Dalmatia and is largely cultivated in France. This is called Dalmatian Insect Powder. *C. coccineum* is cultivated in California and furnishes Buhach. The common chrysanthemum belongs to *C.*

Indicum, *C. morifolium* and their hybrids. To the same genus belong several other ornamentals, such as Marguerite and feverfew.

Cicer arietinum. Gram or chick pea. Leguminosæ. An annual vetch-like plant of Europe and Asia whose seeds are extensively used in India as a staple article of food.

□ *Cichorium*. Compositæ. *C. Intybus* of Europe is the chickory whose roasted roots are used as a substitute for or an adulterant of coffee. *C. Endive* of Asia is the endive whose blanched leaves are used as a salad or pot-herb.

Cinchoan Calisaya. Peruvian bark. Rubiaceæ. Native of Peruvian Andes. The bark also called Calisaya bark furnishes the alkaloid quinine, whose sulphate is the much used drug.

Cinnamomum. Cinnamon. Lauraceæ. Common cinnamon is the bark of *C. Zeylanicum* a native tree of southwest Asia. *C. Cassia* furnishes cassia bark also used as a spice. Cassia buds are obtained from this and some other species. They are the unexpanded flower buds.

Citrullus vulgaris. Watermellon. Cucurbitaceæ. Native of Africa. One variety is known as citron or pie-melon. The flesh is preserved and used in pastry. It should not be confused with the true citron of the genus *Citrus*.

Citrus. Citrous fruits. Rutaceæ. Moderate sized or small trees, natives of southern Asia and now widely cultivated in the tropics and subtropical regions. In the United States the cultivation on a commercial scale is confined to Florida and southern California. The most important is the orange, *C. Aurantium*, var. *Sinensis*. Our oranges in this country come mostly from Florida, Mexico and California. Bergamot oil is obtained from the rind of the variety *Bergamia*. The tangarine and mandarin oranges (*C. nobilis*) are used to a limited extent in this country. The next in importance is the lemon. (*C. Medica*, var. *Limon*) grown in California and somewhat in Florida. Lemons are extensively imported from southern Europe. The lime, (*C. Medica*, var. *acida*) is a small nearly globose fruit with a thin rind and very acid juice. Lime juice as well as lemon juice is much used as an antiscorbutic. The essential ingredient of the juice is citric acid, which is extracted and used for the same purpose. The lime is grown in the United States but not on an extensive scale. It does not bear shipment well. The citron (*C. Medica*) is a large oblong rough

skinned fruit, six inches or more long, though the varieties differ much in size and shape. The thick rind is used in making preserves and confections. The Shaddock, (*C. Decumana*) named from Captain Shaddock who first brought it from China, and also called grape fruit and pomelo, is larger than the orange and has a bitter tissue surrounding the pulp. Cultivated considerably in south Florida.

Clematis. Ranunculaceæ. Ornamental climbing vines.

Cocos nucifera. Cocoanut. Palmæ. Common on all tropical shores. Bears a succession of fruits at the base of the cluster of leaves. The fruit is a drupe, obtusely three angled, smooth on the surface and about a foot long. The outer fibrous husk is removed before it is shipped. The fiber of the husk is used for a variety of purposes, such as matting and cordage. The oil which is extracted from the meat is used as a substitute for butter in the tropics, and also extensively used in the arts. Other parts of the plant are used in some countries for a great variety of purposes.

Coffea Arabica. Coffee. Rubiaceæ. A native of Abyssinia, named from Caffa a province of that country. Now cultivated all over the tropics where the conditions are favorable. Used as a beverage in Europe since about the middle of the sixteenth century. A small tree or usually cultivated as a shrub. Fruit a two-seeded red berry about the size and shape of a cranberry. The seed are freed from the pulp and constitute the coffee of commerce.

Coleus. Foliage plant. Labiatae. Ornamental herbs of the Old World. Mostly hybrids of *C. Blumei* and *C. Verschaffeltii*. The foliage contains an abundance of chlorophyll though it is more or less hidden by the red or yellow coloring matter.

Colutea arborescens. Bladder senna. Leguminosæ. Ornamental shrub from Europe.

Conium maculatum. Poison Hemlock. Umbelliferæ. A European herb containing a very poisonous alkaloid conin, which is used as a drug. Supposed to be the plant administered to Socrates.

Convallaria majalis. Lily-of-the-Valley. Liliaceæ. An ornamental herb, wild in Europe and America.

Corchorus. Jute. Liliaceæ. *C. capsularis* and *C. olitorius*, both of Asia, furnish the stem fiber called jute, used for cordage and bagging.

A. S. HITCHCOCK.

THE INDUSTRIALIST.

*Published weekly during the College year by the
Printing Department of the*

KANSAS STATE AGRICULTURAL COLLEGE. Manhattan, Kansas.

☆ ☆ ☆

PRES. E. R. NICHOLS.....Editor-in-Chief
PROF. J. D. WALTERS.....Local Editor
PROF. J. T. WILLARD.....Alumni Editor

BOARD OF REGENTS.

HON. E. T. FAIRCHILD, President....Ellsworth
HON. J. S. McDOWELL, Vice-President,
Smith Center
HON. W. T. YOE, Treasurer.....Independence
HON. WM. HUNTER, Loan Comm'r, Blue Rapids
HON. MRS. SUSAN J. ST. JOHN.....Olathe
HON. CARL VROOMAN.....Parsons
HON. J. M. SATTERTHWAITE.....Douglass

PRES. E. R. NICHOLS, Sec. *ex-officio*.

LOCAL NOTES.

Miss May Secrest attended a farmers' institute at Gardner last Thursday and Friday.

Several requests have been received by the dairy school for competent cheese and butter makers.

The Experiment Station has just received five large bags of sugar-beet seed from Wohanka and Comp, in Prag, Austria.

The Brown Swiss Breeders' Association has presented the Farm Department with a full set of their pedigree records, four handsome volumes.

Regents Hunter and McDowell were at the College last Thursday to confer with the legislative visiting committee about the needs of the College.

The twelfth biennial report of the Board of Regents and the Faculty has been received from the State printer and is being mailed to interested parties.

The second-year dairy course students are taking up an extended study of the effects which the churning temperature has upon the amount of moisture in butter.

Student C. C. Winsler went to Paxico and Alta Vista, Wednesday, to make milk tests at these stations. The cream from these places is purchased by the College.

Miss Gertrude Williams, of Milwaukee, Wis., the newly elected teacher of calisthenics, has written President Nichols that she will be at her post at this College on February 1.

Mr. John N. Morris, of Garnett, Kan., representing the Sharples Company, of Chicago, called at the dairy school on Tuesday. His company has loaned the College two tubular cream separators.

The dairy school has received a hand separator from the Empire Cream Separator Company, of Stockholm, Sweden. The machine has a capacity of about fifty pounds per hour and is the smallest separator made.

Senator John L. Caldwell, of Bourbon county, the youngest senator in the State, visited College Saturday. Although a young man, Mr. Caldwell is a school teacher of some note and stands at the head of his profession in his home county.

Professor Weida will conduct the Sunday evening services of the Manhattan Episcopal church until the vacancy, caused by the resignation of Reverend James, can be filled.

Professor and Mrs. Metcalf and Miss Josephine Berry went to Topeka, January 19, to hear Elbert Hubbard's lecture. Miss Berry went on to spend Sunday with friends in Kansas City.

Eight of last years' farmers' short course boys and six of last years' dairy school students returned for regular College work last fall. The short courses promise to become important feeders for the four-year College courses.

One hundred six students are now enrolled in the farmers' short course. Six young men came to take this course but became so pleased with the work of the College that they have enrolled in the four-years' course.

The January number of the *Western School Journal* says: "We congratulate President Fairchild on the great success which marked the meeting of the State Teachers' Association in attendance, lectures, and quality of discussion."

Professor Hitchcock has received a letter from the secretary of the International Botanical Society, whose headquarters is at Paris, France, that he has been voted a silver medallion for efficient work as the president of the association during the past year.

The second term farmers' short course students are making drawings for a modern dairy barn under the direction of Professor Walters, and are taking much interest in the work. The professor says that he has not had a more earnest class in twenty-five years.

The Metcalf Recitals at the schoolhouse last Friday night were indeed a rare treat for our people. The house was crowded to its utmost capacity and from the frequent bursts of applause the audience was thoroughly in sympathy with the entertainment.
—Riley Regent.

The Oxford Musical Club, who gave a concert in chapel on the evening of January 24, was greeted by a full house and gave general satisfaction. Their program was light but pleasing. The next number of the College lecture course will be a concert by the Ottumwa Male Quartet, February 7.

The official visit of the joint committee on ways and means of the legislature failed to materialize at the scheduled time last Thursday because the members decided to see us next week when making the home trip through Manhattan. The committee will first inspect the Fort Hays reservation. From there they will go to Ellsworth to visit the Mother Bickerdyke Home. They will then go north to Beloit to inspect the State Industrial School for Girls. Manhattan will probably not be reached before Tuesday or Wednesday.

The program of the farmers' short course announces that weekly lectures will be given in both years, on subjects of most interest to the students. Last year these lectures were given by the teachers of the Farm Department, but this year the other departments will assist in this work. Professors Walters, Willard, Hitchcock, Cottrell, Popenoe, Eyer, Sisson and Butler will deliver a lecture, each.

Last week the INDUSTRIALIST mentioned the generous action of several Kansas breeders of high-grade stock who have presented the Farm Department with fine young animals. One of the animals has now arrived and the other three will soon follow. A letter received from Steele Brothers, of Belvoir, Douglas county, dated January 16, says: "We are glad the Board of Regents approve of the donation movement and we hope before it ends the Agricultural College will have the best lot of pure-bred stock of any college in the United States. Don't come down thinking you are getting something for nothing, as we feel this one Hereford will not near pay for what we have received from the College." Geo. W. West & Son, of Silver Lake, Shawnee county, write under date of January 14: "We are glad to know that you have not forgotten our offer. Any time you wish to come down for the Hereford, let us know a few days ahead and I will meet you at the train."

Last week the INDUSTRIALIST announced the probable loss to the Agricultural College of Prof. A. S. Hitchcock, of the chair of botany, who has received a call by the U. S. Department of Agriculture at a greatly increased salary. This week we are pained to publish the resignation of Prof. J. D. Harper, of the chair of mechanical engineering. Professor Harper has accepted the position of expert engineer with the well-known manufacturing firm of Fairbanks, Morse & Company, at Beloit, Wis. We understand that his salary at the new position will be much better than the Agricultural College could offer. He has handed his resignation to President Nichols and expects to depart for his new field of labor at once. The College can ill afford to lose Professor Harper, especially at this time of the college year. He came here three years ago, when his predecessor, O. P. Hood, resigned the chair to accept a similar position in Michigan at a salary several hundred dollars better than the Agricultural College could pay. The extensive shops, the engineering laboratory, the enlarged power plant and the course of study of the Mechanical Engineering Department are attesting to his ability and energy. His students and colleagues alike deplore his unexpected departure from Manhattan.

Seventeen students have entered the cheese department of the dairy course. Of this number only one has had any practical experience, hence the class devotes the entire time to the study of the various processes and how to determine the right condition of milk for cheese making. This is done by the use of the Monrad, Marschall, and Alkali tests. It is very important to know the con-

dition of the milk before commencing the process of manufacture, and to regulate the use of rennet, heat, and salt accordingly. Many cheese makers do not understand the effect of rennet, heat and salt as they should and one quite often finds a maker using the same amount of rennet, the same temperature and salt every day. In the cheese department we have four small cheese vats with a complete set of apparatus for each. Four men work each vat, assigned to certain duties for the day, and change daily, thus allowing each student to become familiar with the entire process. We expect to manufacture cheese under ideal conditions by both the granular and cheddar systems, and have several styles of curd mills for grinding the curd. The instruction also shows how over-ripe milk, sweet milk and tainted milk should be handled. The department needs a well-arranged curing room to exhibit the effects of different temperatures upon the process of curing.

We are in receipt of a copy of the twelfth biennial report of the State Board of Agriculture. The volume is fully up to the high standard of the past reports of Secretary Coburn. The first six hundred seventy pages are given to the promotion of improved animal and farm husbandry, under conditions the Kansas stockman and the Kansas farmer find ready-made or can make in their surroundings; to the furtherance of the dairy interests, through a higher appreciation of the cow and her better management; and to encouraging the most approved systems of road making. The succeeding three hundred pages tell in careful detail the story of every township's achievements, annually, in the growing of each important crop, its acreage and yield, and its value where produced; the number and value, by counties, of each class of live stock; the mortality of live stock; the value of animals slaughtered or sold for slaughter, and of poultry and eggs sold; the population of each township and municipality; the assessed valuation of all lands, personal property, city lots, and railroads; the date of organization of each county, its area, rank in population, and miles main-track railroad. The biennial period with which the volume deals has been agriculturally by far the most profitably productive of any in the State's history, and the percentages of increase in values of products from Kansas soil, not alone in this period, but on an average for all the years mentioned, are so gratifying that every citizen and friend of the State may well feel proud. When it is considered that the State consists of more than fifty million acres of land, practically all arable and fertile—a country sixty-one per cent wider in extent than England, two and one-half times greater than Ireland, nearly three times larger than Scotland, ten times greater in area than Wales, and in the most favored zone—and but a fraction of this utilized except in a limited way, and none of it nearly to its possibilities, it is patent that no one can foretell the riches in store for the years to come. With her present prosperity, and the bright future of which her many advantages give unquestionable assurance, Kansas is certainly occupying a most enviable position.

Professor Cottrell tells an amusing story about his experience with a lady in a county in the northern part of the State during his travels in the interest of alfalfa. The Professor said: "I visited a farm one day not far from Shawnee county to learn how they were getting along with their alfalfa field, which I had assisted in starting three years previous. On reaching the house I found no one but the lady present. She recognized me and said, 'You are the man who persuaded my husband to plant alfalfa on our farm.' I replied I was, and asked how the field was getting along. She said, 'My husband has just completed plowing up the last acre. Since the first year it was sown we have had a gang of men here all the time at hay harvest, and that got too monotonous for me. I made him destroy the alfalfa, and now I have a chance to rest.'"

ALUMNI AND FORMER STUDENTS.

Mr. George Doll writes to Professor Otis from Larned: "I am living on my own farm and am teaching school. My first born, a son, made his appearance in my home January 4."

Mr. J. A. Conover writes from Watson Ranch, Neb.: "My great wish is about to be fulfilled, for, if nothing happens, I will be in New York in about two weeks after a car-load of topknot cows and two bulls. Mr. Watson will go also, and we will visit some of the leading dairymen of the East. Mr. Watson has left entirely and we are moving into his house."

David G. Fairchild, '88, has been receiving extended notices in the daily press recently because of his services in the Department of Agriculture in search of valuable new plants for introduction in this country. It is a little remarkable that of those connected with the department, the ones who do most of this kind of work are all graduates of this institution, viz., W. T. Swingle, '90, M. A. Carleton, '87, and D. G. Fairchild.

Mr. J. B. Quinby, well known to many of our readers, and loved by all who knew him, died on the 17th instant, of pneumonia. His fatal illness began with an attack of grippe Christmas day. He seemed to have nearly recovered from this when pneumonia with alarming symptoms set in, from which he never really rallied. He had been residing in Manhattan the past few months with his daughter, Ida Quinby-Gardner, '86. His other children, Frank Quinby, of Council Grove, May Quinby-Mason, of Berea, Ky., and Ada Quinby-Perry, '86, arrived during his illness. Though, because of the infirmities of age, life seemed to him to hold but little of value, he will always be remembered as one of a most cheerful and sunny nature, who showed us how to grow old gracefully. His children will cherish his memory as that of a most devoted father, and all who knew him recognize his sterling worth. His children have all been students here, and will have the sympathy of a wide circle of friends and acquaintances.

KANSAS STATE AGRICULTURAL COLLEGE

FIVE COURSES OF STUDY.....

Each complete in itself and leading to the degree of Bachelor of Science, are as follows:

- 1—General Science
- 2—Agriculture
- 3—Domestic Science
- 4—Mechanical Engineering
- 5—Electrical Engineering

This Institution

is supported by the General Government and by the State of Kansas, and is designed, by its instruction, to promote the liberal and practical education of the industrial classes in the several pursuits of life.



COLLEGE classes are open to both sexes. Tuition is free in all departments. There is no charge for laboratory supplies. Room and board can be had at very reasonable rates. The yearly expenses, exclusive of clothes and traveling expenses, are between \$100 and \$200. All College laboratories, shops and class rooms are well supplied with needful apparatus and appliances. Practical application is made of the principles learned in the study of the sciences, and thus the College is made a school of applied science.

Domestic Science.

A full course in Domestic Science now in successful operation. The work in the Department of Domestic Science forms an interesting part of the instruction given in the women's course. It is of great practical and disciplinary value.

FOUR SHORT COURSES

Open to students of mature age who cannot, on account of time or money, take one of the four-year courses.

- 1—Apprentice
- 2—Domestic Science
- 3—Dairying
- 4—Agricultural

For catalogue or other information, address

ERNEST R. NICHOLS, A. M., PRES.,
MANHATTAN, KANSAS.

(Horticultural Building and Greenhouse.)

Volume 27.

Number 17.

THE INDUSTRIALIST

ISSUED WEEKLY BY

KANSAS STATE
AGRICULTURAL COLLEGE

☆ ☆ ☆

Editor-in-Chief, *Pres. E. R. Nichols*
Local Editor, *Prof. J. D. Walters*
Alumni and Former Students, *Prof. J. T. Willard*

☆ ☆ ☆

Published by
PRINTING DEPARTMENT
J. D. Rickman, Supt.

Entered at post-office, Man-
hattan, Kan., as second-class
matter. Act of July 16, 1894.

Historical Society

BOARD OF INSTRUCTION.

ERNEST R. NICHOLS, A. M. (University of Iowa), President.....	631 Poyntz avenue
JOHN D. WALTERS, M. S. (Kansas State Agricultural College).....	North end of Sixth street
ALEXANDER B. BROWN, (Boston Music School), A. M. (Olivet).....	817 Houston street
JULIUS T. WILLARD, M. S. (Kansas State Agricultural College).....	1211 Moro street
ALBERT S. HITCHCOCK, M. S. (Iowa Agricultural College).....	College Hill, 2 miles N. W. of College
FREDRIC A. METCALF, O. M. Superioris Honoris (Emerson Coll. Oratory) 728 Poyntz avenue	
GEORGE F. WRIDA, Ph. D. (Johns Hopkins).....	517 Fremont street
HENRY M. COTTRELL, M. S. (Kansas State Agricultural College).....	College Campus
MISS MINNIE AYA NELLIE STONER, (Boston N. S. of H. A.), B. S. (S. D. A. C.) 5 S. Juliette ave	
JOSEPH D. HARPER, M. S. (Rose Polytechnic Institute) Houston st., between 6th. and 7th. streets	
EDWIN A. POPENOE, A. M. (Washburn).....	Seventh and Osage streets
FRANK C. LOCKWOOD, Ph D (Northwestern).....	Fourth and Osage
BENJ. L. REMICK, Ph. M. (Cornell College).....	Fourth and Osage
BENJ. F. EYER	512 Houston street
C. E. GOODSELL, A. M. (Franklin).....	626 Houston street
SEPTIMUS SISSON, S. B. (Chicago), V. S. (Toronto).....	Cor. Manhattan avenue and Moro
TAIT BUTLER, V. S. (Toronto).....	527 Poyntz avenue
MISS HARRIET HOWELL, (Pratt Institute).....	5 S. Juliette avenue
JOSHUA D. RICKMAN, I. T. U.	911 Osage street
MISS JOSEPHINE T. BERRY, A. B. (Kansas University).....	801 Poyntz avenue
B. S. MCFARLAND, A. M. (Miami).....	415 Pierre street
MISS GERTRUDE WILLIAMS	
MISS LORENA E. CLEMONS, B. S. (K. S. A. C.), Secretary.....	Corner Fourth and Laramie
D. H. OTIS, M. S. (Kansas State Agricultural College).....	College Hill
WILLIAM ARCH MCKEEVER, A. M. (Kansas University).....	621 Houston street
MISS JOSEPHINE C. HARPER, Instructor in Mathematics.....	Corner Sixth and Pierre streets
MISS ALICE RUPP, (Indiana State Normal), Instructor in English.....	620 Houston street
CHARLES EASTMAN, Cadet Major and Acting Commandant.....	611 Poyntz avenue
William L. House, Foreman of Carpenter Shop.....	Corner Sixth and Colorado
Chas. W. Pape, M. S. (K. S. A. C.), Ass't in Zoölogy and Ass't Curator Museum.....	918 Osage st
R. W. Clothier, M. S. (K. S. A. C.), Assistant in Chemistry.....	Fremont, between Fifth and Sixth
Margaret J. Minis, Assistant Librarian.....	Fourth and Moro streets
R. H. Brown, M. T. (Kan. Con. of Music), B. S. (K. S. A. C.), Ass't in Music.....	817 Houston street
J. M. Westgate, M. S. (K. S. A. C.), Assistant in Botany.....	Cor. Manhattan avenue and Vattier
May Secrest, B. S. (K. S. A. C.), Assistant in Domestic Art.....	Cor. Leavenworth and Seventh
Wm. Anderson, B. S. (K. S. A. C.), Assistant in Mathematics.....	Cor. Humboldt and Juliette ave
Gertrude Barnes, Assistant Librarian.....	Cor. 9th and Moro
Albert Dickens, B. S. (K. S. A. C.), Assistant in Horticulture.....	Fremont and Manhattan avenue
William Baxter, Foreman of Greenhouses.....	
J. G. Haney, B. S. (K. S. A. C.), Ass't in Feeding and Field Experiments.....	Manhattan ave and Kearney
Mary Pritner, B. S. (K. S. A. C.), Assistant in Domestic Science.....	Cor. 7th and Leavenworth
Theodore Lindquist, M. S. (Northwestern), Ass't Physics.....	Cor. Fifth and Humboldt
W. M. Sawdon, B. S. (Purdue), Assistant in Mechanics.....	Juliette and Houston
O. I. Purdy, B. S. (K. S. A. C.), Assistant in Printing.....	1216 Fremont street
Ada Rice, B. S. (K. S. A. C.), Assistant in Preparatory Department.....	Osage and 8th. street
Louis Wabnitz, Foreman Iron Shops.....	5th and Osage
Henry Van Leeuwen, (Univ. Wis. D. S.) Inst'r in Cheese Making.....	Manhattan and Kearney
E. W. Curtis, (Univ. Wis. D. S.) Instructor in Butter Making.....	
Florence L. Grant (Mass. Normal Art School), Assistant in Drawing.....	Fourth and Osage
A. T. Kinsley, B. S. (K. S. A. C.), Assistant Veterinary Department.....	Tenth and Kearney sts
Elizabeth Agnew, B. S. (K. S. A. C.), Assistant in Domestic Science.....	Ninth and Moro streets
Jesse B. Norton, B. S. (K. S. A. C.), Assistant in Entomology.....	
E. C. Gasser, Foreman of Foundry and Blacksmith Shop.....	
Ina E. Holroyd, B. S. (K. S. A. C.), Assistant in Preparatory Department.....	
Jacob Lund, M. S. (K. S. A. C.), Engineer.....	Cor. Tenth and Kearney
C. Jeanette Perry, B. S. (K. S. A. C.), Executive Clerk.....	Corner Colorado and Fifth
Alice Melton, B. S. (K. S. A. C.), Clerk in Director's office.....	
W. R. Lewis, Janitor	N. E. corner Main College Building
Archie Huycke, Secretary to President.....	Manhattan avenue and Kearney

THE INDUSTRIALIST.

VOL. 27.

MANHATTAN, KAN., FEBRUARY 5, 1901.

No. 17

OUR HEATING SYSTEM.

IN 1882 our present heating system was started. Up to that time the College buildings were all heated with stoves. It was during the same year that the central part of the Main building was completed. The south wing, the Library building, Domestic Science Hall and the shops (except the carpenter shop) had not yet made their appearance on the campus, while the number of students at that time was probably about one-fourth of the present number. The first class that graduated in the chapel numbered exactly an even dozen and was at that time the largest that had ever gone out from the College.

The first instalment of our present system, one boiler, was put in the basement of the Main building under the east end of the chapel. Two years later the south wing was added to the Main building and a second boiler was put in. These two boilers heated the Main building from that location until in 1893, when both were removed to the present boiler house. The Chemical Laboratory (now burned down) was heated by a cast-iron sectional boiler for a number of years. This was later replaced by a small upright boiler that at one time had been used for power at the barn, and later was sold to a laundry firm after the laboratory had been hitched on to the present plant. The Armory was also heated by a cast-iron sectional boiler, one section of which, after few years use, broke and put the boiler out of use. It was replaced by a new one, which did duty until the Armory was connected to the general system.

The carpenter-shop boiler was a forty horse-power steel boiler and occupied a place at the northwest corner of the carpenter shop for about seven years. It heated the building and furnished power for running the machinery in the shops and the printing-press, which at that time was located on the second floor of the carpenter shop.

In '93 the present power-house was built. The two boilers in

the Main building were taken out and placed on the south side of the new boiler house. Two new ones of equal size and similar build were put beside them, and the little carpenter shop boiler was put against the north wall. So far none of these boilers had been used for power except the one from the carpenter-shop; but in the meantime the College had grown, new buildings had been added, electric lighting had been provided for, and the iron shops and foundry had come into existence. The little boiler was used exclusively for power in the afternoon, and on special occasions in the forenoon. This boiler was removed in '97, and a new boiler similar to the other four was put in. This gave a battery of five boilers, each rated at sixty horse-power, with a combined grate surface of one hundred square feet. Four of these have been used for heating purposes in the winter, while the fifth was mostly used for power purposes. In the severe winter of '98 and '99 the plant proved inadequate to keep the various buildings warm, and it was foreseen that it would be necessary to provide additional boiler capacity. With the tremendous growth of the shops in '99 came also an extension to the boiler house, doubling its size. Another boiler was added, but of larger size and neater appearance. This is supposed to be about fifty per cent larger than any of the other boilers, and is a very material addition to the heating plant. It has a smaller grate area in proportion than any of the old boilers, and for this reason is less apt to give trouble by priming when the boiler is forced.

Do these six boilers with one hundred twenty square feet of grate area give sufficient steam to keep the different buildings warm in severe weather? This may be doubted. The peculiar condition existing here is the changing of classes every fifty minutes, at which time almost the entire student body changes rooms. The rush of students through the halls, the wide-open swinging doors throughout all the buildings and all the rooms for a period of about five minutes, changes almost completely the air in every room from being warm to almost out-door temperature. This must then be warmed quickly in order that the room may not seem chilly. Such conditions are very trying except for a heating system of very ample capacity.

We have approximately twenty thousand square feet of radiating surface in the different buildings heated from the main plant; besides that we have a large but indefinite amount of non-covered

pipe in the basements of all of the buildings, another large amount that leads directly to the radiating surfaces, some covered pipes, and the mains themselves. The two last items ought, perhaps, not to be considered. According to a table given by Willett, we ought to have seven hundred fifty-four square inches of grate surface for one thousand square feet of radiating surface. We should therefore have $20 \times 754 = 15080$ square inches, or somewhat over one hundred four square feet of grate surface for what radiating surface we have. We have one hundred twenty square feet of grate surface, but we use twenty square feet exclusively for power purposes. This leaves us only one hundred square feet for heating, a rather small amount considering the conditions already stated, and would indicate that we ought to have more boilers to give sufficient surface toward heating the College in severe weather.

This is especially the case when any repairs are to be made on a boiler, such as lining up the furnace walls, grinding or fixing a safety valve, or washing and cleaning a boiler or any other thing that may happen to temporarily lay up a boiler; it is then that we feel the need of more capacity. The quality of the coal we use is also against us. It contains a great deal of ash and clinker-forming material, and we cannot get the full benefit of what grate surface we have. On five of the boilers the grate is out of proportion to the boilers and is too large by nearly twenty per cent. This offsets to a certain extent the poor quality of the coal, but when the grates are freshly cleaned and the fires crowded, a little priming takes place and a large quantity of water is thrown over into the heating system, which is then driven into some of the radiators by the steam. This causes hammering and cold radiators.

Also a large share of the firing in the boiler house is done by apprentices and students who have had no previous training, but who do the work for the sake of learning. The coal is either heaped up on the grates or allowed to burn unevenly, with large air-holes in it, thus materially, at times, diminishing the efficiency of the fire.

The buildings nearest the boiler house are naturally best supplied with steam; thus, for instance, the Main building heats up much better on the whole than Science Hall, principally because all of the water of condensation in the conduit and also all that is thrown over into the heating system by the priming of the boilers (which happens frequently unless carefully watched) clogs the sys-

tems with water. A large steam-trap in the manhole by the library would help that to a large extent; also a pressure regulating valve on each main to every building would be a good thing. This valve could be set at the required pressure, then a heavier pressure could be carried on the boilers. If a boiler pressure of fifty or sixty pounds was carried and the water of condensation and also what is thrown over by priming was trapped before entering the buildings and then the pressure reduced in the building to about ten pounds the buildings would be supplied with dry steam at a temperature of fifty to seventy degrees Fahrenheit greater than that which would be due to the pressure in the building. This would undoubtedly make the system much less noisy, and give more efficient service.

At the present time, also much of our exhaust steam goes to waste, because no efficient means have been taken to utilize the same. The exhaust steam is yearly becoming of more importance, as more power is used each succeeding year. Thus six years ago the engine would run maybe from twenty-five to perhaps as high as forty hours per week, probably not averaging thirty. Now the engine runs the whole working time, and more too, averaging about sixty four hours per week. But the great difference does not consist solely in the number of hours run, but in the amount of power used. Then we did not very often carry more than fifty amperes on our two-hundred-twenty-volt system—usually much less. Now we count it small if our load does not reach twice that amount, and not unfrequently four times as much. A comparatively small outlay of money would remedy these things and give very satisfactory returns considered in the nature of an investment. Perhaps in the near future, when one or more new buildings appear on the campus and an added capacity of the power plant becomes an absolute necessity, these minor defects may be remedied, and the plant put on a more economical running basis, and also do the work in a more satisfactory manner.

J. LUND.

H. E. Arnold, dairy student last winter, writes of successfully establishing a bottled milk trade at Devil's Lake, North Dakota, and says that he has purchased a Guernsey cow giving milk that tests nine per cent.

THE AIM OF THE HISTORY DEPARTMENT.

IT IS not, of course, easy to set forth in a brief article, such as this must be, the real aim of the Department of History and Economics and hope to be perfectly understood. Still, as it is always of great advantage to the student to know, before entering a department, what is the chief aim of that department, it may be worth while to make the effort in this connection.

The process of elimination is sometimes a good one, at least to begin with. So here it might be well to state at the outset at least one thing that the Department of History and Economics in the Kansas State Agricultural College does not expect to do. That is, it does not expect to undertake to inculcate any system whatever of infallible theories or unimpeachable dogmas. The idea usually associated with the study of history particularly, and which clings with almost equal tenacity to the study of economics, is that the student is to be crammed full of information, and especially that he is to go forth from these studies armed with a set of theories that will at once solve all the difficult problems of political science and political economy that practical, every-day life presents to him. Information, ready-made theories—these are the things most sought. Yet they are not, or ought not to be, the real purpose in any department where scientific methods are employed. The departments of history and economics are perhaps most likely of any of the departments to suffer from this erroneous view of the real end and aim of education; for these departments deal with questions that are apt to be of absorbing interest to the masses generally. They touch society on two very sensitive nerves—the political and economic. But while interested in the correct solution of the practical problems already referred to, few people are willing to take the pains to study them in a scientific manner. What they desire, therefore, as already said, is some ready-made theories, or at least some material already arranged out of which they may quickly construct a theory that will at least look fairly plausible to the eye of the untrained.

Probably now enough has been said already to suggest what is the ultimate aim of the Department of History and Economics under its present administration. It is to awaken a deeper interest and to teach the methods of scientific investigation in these two branches that must be first mastered before we can approach the more practical questions of the day. The habit of careful and

accurate comparison, of cold, dispassionate criticism, is one that is not readily acquired, especially when this must be done almost within sight of practical problems of absorbing interest. There are some, indeed, who are, or at least seem to be, unable ever to acquire this habit of mind. They are always intensely partisan in whatever view they take, and hence are never able to do full justice to the other side. This is truly a lamentable condition to be in, in any case, but especially so for the man or woman who hopes ever to wield much influence in the community in which he or she lives.

It is but fair, however, to admit that there is another possible way of looking at this whole question. For instance, the writer recently saw what passed in some quarters for an able criticism on certain of our large universities, made by the president of a different class of educational institutions. The whole tenor of this criticism was in direct opposition to the position taken in the foregoing, though the question involved was the more general one of the true aim of education. The burden of the president's thought seemed to be this: Certain of our schools were not teaching enough positive truth. The attainment of complete negation in the realm of knowledge seemed to be continually held before the student as the ultimate end of his education. It was claimed that the appropriate symbol to represent the training of a student in such an institution was the interrogation point. Presumably by this last was meant that the student is encouraged to assume the questioning attitude toward everything, accepting nothing as finally settled.

In thus criticising what he believes to be the result of the training in some of our larger universities, the gentleman in question incidentally reveals his own theory of the true aim of all education, namely, to teach positive knowledge to a far greater extent than is now being done. This may be the correct view to take, but at any rate the trend of thought is not that way. Only a few days ago Doctor Faunce, president of Brown University, accurately described the change that has already taken place in educational methods, when he said: "The old education aimed to teach the child what is true, hear him recite it, and give him a certificate or diploma. The new education seeks to awaken the child's curiosity, attention and interest. It seeks to induce the child to find out for himself what is true in nature, history, and language, and apply the knowledge to actual life."

It is in harmony with the "new education" as here set forth that the present incumbent of the chair of history and economics in this institution expects to conduct the work of this department. The infallibility of human wisdom applied to any branch of learning is no part of his creed. He does not therefore consider it as being within his province to teach students what to believe. The subjects passing under review from time to time in both history and economics have a more or less practical bearing on the questions of the day. Just what that bearing is it will be for each student to determine for himself. If the student finishes his course without having settled finally a single question, it certainly is far better for him than if he had attained to the ultimate truth in all or even half the subjects of investigation taken up. While the utmost pains will be given to developing careful and accurate methods of investigation, no effort whatever will be made to hasten conclusions.

If a punctuation mark of any sort could fittingly represent the attitude of the student who leaves this department, having completed its various courses, by all means let it be the interrogation point. The student who has, by the time he completes his college course, come to a full stop in any line has probably "stopped never to go again." Even a pause may prove disastrous. By all means, then, the true aim should be, correct methods of investigation, and then the more "interrogation points" the better.

C. E. GOODELL.

Sec. F. D. Coburn, of the State Board of Agriculture, has written to Professor Cottrell that he will send as many copies of the last biennial report to agricultural students as he can spare, giving preference to the best worded, best spelled and written letters of request and to those in which the writer declares his intention to continue in the business of farming, stock raising or dairying after leaving College. The letters must be sent before Monday, February 11. No attention will be paid postal-card applications nor slovenly written letters. To each of the writers of the two best letters Mr. Coburn will send a copy of the report, bound in half Morocco and lettered with the name of the applicant; the awards to be made by some competent business man, selected for that purpose.

WINTER-TERM PROGRAM, SHOWING INSTRUCTOR,

INSTRUCTOR.	First Hour.	Second Hour.	Third Hour.	Fourth Hour.
Walters.....	Home. Arch.†.15	Geom. Draw...25	Proj. II. ....26	Farm Arch.*...19
Grant.....	Geom. Draw...31	Geom. Draw...31	Obj. Drawing...21	Geom. Draw...43
Brown.....	Singing, Notation, Band, Orchestra.	F. H. Draw...32	Geom. Draw...29	
Brown, R. H.....	Organ and Orchestral Instruments.			
Hutto.....	Piano and Organ.			
Willard†.....	Chem. Foods*, 28	Chem. Foods*, 26	Chem. Metals	Chem. Metals
Weida.....		Chemistry†...16	W. & F.....44	W. & F.....42
Clothier†.....			Or. Chem. TTS, 38	Or. Chem. TTS, 24
Hitchcock†.....		Botany.....65	Botany.....13	
Westgate†.....				
Metcalf.....	Oratory I, alt. .26	Oratory III†...15	Oratory I, alt. .17	Oratory II.....13
Cottrell†.....	Oratory, alt. .26	Breeding.....36	Oratory, alt. .18	
Otis†.....	Stock Feed†...28	Dairying.....21	Feeding.....44	Feeding.....45
Haney†.....	Agriculture...59	Feeding.....30	Agriculture...34	Dairying*.....60
Curtis.....	Agriculture...52		Agriculture...51	Agriculture.....31
Van Leeuwen.....	Bookkeeping...26		Bookkeeping...38	
Stoner.....	Sp. Physiol...19		House. Econ...33	House. Econ...31
Pritner.....		Applied Mech, 5	Household Economics.	
Harper.....		Mechanics.....28	Eng. Power Plt. 9	
Sawdon.....				
House.....	Wood-work...9	Wood-work...9	Wood-work...13	Wood-work...19
Wabnitz.....	Farmers' Short Course, 16; Apprentices, 17			
Gasser.....	Blacksmithing Monday mornings, 45			
Lund.....	Blacksmithing Monday afternoons, 46			
Popenoe†.....	Boiler and Engine			
Dickens†.....	Hort. & Ent...50	Hort. & Ent...47	Floriculture...6	Horticulture...10
Norton†.....	Veg. Garden...1			Hort. Prac....1
Lockwood.....	Am. Lit.....23	Themes...31	English Lit....24	English Lit.....18
McKeever.....	German.....19	Readings I....46	Logic.....28	
Rupp.....	Readings II...35	Themes.....31	Readings I....52	Readings II....46
Remick.....	Calculus.....9	Geometry II...27	Algebra III....41	Geometry II...32
Harper.....	Trigonometry, 35	Algebra II....32	Geometry I....23	Trigonometry. 33
Anderson.....	Algebra III...35	Algebra II....28	Algebra II....35	Geometry I....32
Eyer.....	Physics.....6	Physics*.....16	Physics.....31	Physics.....27
Lindquist.....	El. Physics...44	El. Physics...47		Algebra II....26
Goodell.....	Civics.....32	Civics.....29	19 Cent. Hist...24	19 Cent. Hist...26
Sisson.....		Physiology...31	Physiology...22	Zoology.....14
Pape.....				
Butler†.....	Vet. Science...14		Dis. Dairy An..34	Dis. Farm Ani. 44
Kinsley†.....	Bacteriology...33	Bacteriology...48	Sp. Laboratory Bacteriology.....8	
Howell.....	Dressmaking...10	Dressmaking...15		
Secrest.....	Sewing I.....21		Sewing II.....15	
Jones.....	Sewing I.....17	Sewing II.....15	Sewing III....11	Sewing I.....9
Rickman†.....	Printing.....4	Printing.....12	Printing.....8	
McFarland.....				
Rice.....	Readings I....33			Readings I....41
Holroyd.....				
Mather.....				
Nichols.....	Algebra II....33			
Manley.....				
Finley.....				

* First half term.

† Second half term.

‡ Experiment Station work.

¶ Four apprentices 10 hours per day.

Morning Class Hours:

1. From 9:05 to 9:50.
2. From 9:55 to 10:40.
3. From 10:45 to 11:30.
4. From 11:35 to 12:20.

Geo. O. Learned, of Stafford, Kan., short-course student last winter, writes of successful experiments with alfalfa. Last summer he run short of the regular feed for horses, and applying what he learned in the short-course work fed a mixture of nine parts wheat shorts and ten parts of corn. He reports that work horses did unusually well with this grain.

Fifth Hour.	Sixth Hour.	Seventh Hour.	Eighth Hour.
Geometrical Drawing, Tu.....	25		
Geometrical Drawing, W.....	20		
Object Drawing, Tu. & Th.....	22		
Free-hand Drawing, W. & F.....	43		
Chemical Laboratory, W. & Th.....	85		
Chemistry I..... Tu. & Th., 38; W. & F., 38			
Chemical Lab..... Tu., 36; W., 43; Th., 43; F., 37			
Botanical Laboratory.....			
Rehearsals for Saturday P.M. chapel exercises.....			
Breeding..... 17			
Milk Testing.....	14		
Industrial.....			
Creamery Butter Making, 58.....			
Cheese Making.....		24	
Domestic Science I, W. & F.....		24	
Cooking Laboratory, W. & F.....			
Machine Design..... 11		Shop Lectures, F.....	36
Engineering Laboratory..... 5		Apprentice Drawing, W.....	16
Mechanical Drawing, Tu. & Th..... 7		Graphic Statics, F.....	5
Wood-work, W. & F..... 11		Short Course.....	17
Machine Shop..... Tu. & Th., 38; W. & F., 42		Foundry..... Tu. & Th., 16; W. & F., 18	
Foundry..... Tu. & Th., 16; W. & F., 16		Blacksmithing..... Tu. & Th., 37; W. & F., 34	
Blacksmithing..... Tu. & Th., 30; W. & F., 31			70
Boiler and engine practice, three divisions.....			
Insects & Diseases..... 1			
Hort. M., 19; Fruit Prop. T. & T., 42; W. & F., 47			
History of Education before chapel.....			
Zoological Laboratory..... Tu., 7; Th., 10			El. Physiology..... 29
Adv. Laboratory Bacteriology, W. & F..... 4			
Dressmaking..... Tu. & Th., 10; W. & F., 15			
Dressmaking, F..... 10			
Sewing I, II, III; Tu. & Th..... 6			
Printing..... 18		Printing..... 48	Arithmetic A..... 35
Bookkeeping..... 34	Bookkeeping..... 28	Bookkeeping..... 48	Algebra I..... 34
Composition..... 41	Composition..... 34	Grammar A..... 38	History B..... 33
Grammar B..... 37	Grammar A..... 35	Read. & Write..... 27	
History A..... 26	History A..... 25	Algebra I..... 18	
Algebra I..... 34	Algebra I..... 30	Geography..... 18	
Arithmetic A..... 36	Arithmetic B..... 39		

5. From 1:35 to 2:20.
6. From 2:25 to 3:10.
7. From 3:15 to 4:00.
8. From 4:05 to 4:50.

5. From 1:30 to 2:30
6. From 2:35 to 3:35.
7. From 3:50 to 4:50.
8. From 4:55 to 5:55.

Returns have just been received from the first shipment of butter made by the dairy school. The lot consisted of eighteen hundred pounds and sold for a cent above the market in Providence, R. I. As this butter was the first made by the boys in the dairy school, the price received speaks well of their work and the ability of Mr. Curtis as an instructor.

THE INDUSTRIALIST.

*Published weekly during the College year by the
Printing Department of the*

KANSAS STATE AGRICULTURAL COLLEGE.

Manhattan, Kansas.

☆ ☆ ☆

PRES. E. R. NICHOLS.....Editor-in-Chief
PROF. J. D. WALTERS.....Local Editor
PROF. J. T. WILLARD.....Alumni Editor

BOARD OF REGENTS.

HON. E. T. FAIRCHILD, President....Ellsworth
HON. J. S. MCDOWELL, Vice-President,
Smith Center
HON. W. T. YOE, Treasurer.....Independence
HON. WM. HUNTER, Loan Comm'r, Blue Rapids
HON. MRS. SUSAN J. ST. JOHN.....Olathe
HON. CARL VROOMAN.....Parsons
HON. J. M. SATTERTHWAITE.....Douglass

PRES. E. R. NICHOLS, Sec. *ex-officio*.

LOCAL NOTES.

A light snow on Saturday last.

Mid-term examination, Saturday, February 9.

Professor and Mrs. J. D. Harper left for Chicago, their future home, last Monday.

President Nichols was in Topeka last Friday wrestling with the legislative committee.

Pres. C. M. Brooke, of Lane University, at Lecompton, was in town one day last week.

Professor Willard and Assistant Miss Pritner attended a farmers' institute at Berryton, near Topeka, last week.

H. T. York is organizing a male quartet to sing at the Episcopal church every Sunday evening, beginning February 10.

The twelfth biennial report of the State Board of Agriculture contains a photoengraving of College Agricultural Hall.

The student hop on January 25, in Union Hall, was not a financial success for the Athletic Association for whose benefit it had been arranged.

Professor Lockwood addressed the children of Manhattan at the M. E. church, last Sunday afternoon, under the auspices of the Junior League.

While returning from the Gardner farmers' institute, Miss May Secrest, of the Domestic Art Department, visited the Kansas City Manual Training School.

Professors Willard and Hitchcock attended an adjourned meeting of the Kansas Academy of Science, at Topeka, Friday and Saturday, January 25 and 26.

John Holland [96], a former student of the Agricultural College, is now assistant cashier of the custom-house at Manila, with a salary of \$150 a month.—*Mercury*.

In the calf-feeding experiment carried on by the Farm Department the calves fed skim-milk and whole corn gained three pounds each per day during the past week, while those fed skim-milk and corn-meal gained one and one-half pounds each.

The bishop of the Episcopal church of Kansas took dinner with Doctor Weida on Saturday, February 2, and went north on the Blue Valley train the same afternoon.

The newly organized class in history of education has twenty-eight students. They meet every morning, and Professor McKeever reports very satisfactory progress.

The American Jersey Cattle Club donated for use in the farm classes two hundred copies of the fifty-six-page pamphlet giving a record of the Jersey herd at the World's Fair.

Applications for farmers' institutes are still coming to the College from many parts of the State. The President can only respond that the appropriation for this purpose is exhausted.

A number of students arranged a farewell ball in honor of Professor and Mrs. J. D. Harper, last Thursday evening in Union Hall, at Manhattan. The parties present report a very good time and a fair attendance of students and city parties.

The "Metcalf Recitals" to be given by Professor and Mrs. Metcalf are booked as follows: Mariadahl, Friday, February 8; Randolph, Saturday, February 9; Lasita, Saturday, February 16. Professor and Mrs. Metcalf are having many calls for full evenings of literary work. They regret that they can accept so few of these propositions.

Last Friday completed one hundred days feeding on the co-operative experiment with condimental feeds that was being made by the Chemical, Farm and Veterinary Departments. The average gain per head of the calves fed Acme feed was 168.5 pounds each, of those not fed Acme feed 167.3 pounds each, and of those having salt mixed with their grain 168 pounds each. Ten calves were fed in each lot.

Professor McKeever is moving into the house on Houston street recently vacated by Professor Harper, and Mrs. D. E. Lantz will reoccupy her own residence, where Professor McKeever has been living since he came to Manhattan. Mrs. Lantz reports that it is very difficult to find a suitable dwelling in Alma, where Professor Lantz is principal of the city schools, and besides she likes her old home better than any other place.

C. V. Holsinger, of Rosedale, is a candidate for Regent of the State Agricultural College at Manhattan. He is one of the prominent young republicans of his section and has many strong endorsements for the position. Mr. Holsinger is a graduate of the school. Up to the present time there has been but one graduate of that school on the Board of Regents, and this fact is being used by his friends with telling effect. The students of the institution have manifested quite an interest in his candidacy and he has bright prospects of succeeding in his ambition.--*Mail and Breeze.*

The Agricultural College was visited by a second detachment of representatives on Monday, but so far we have waited in vain for the promised visit of the senate ways and means committee. The visiting delegation consisted of Hon. W. R. Bigham, of Morris county; Hon. M. C. Hallett, of Rush county; Hon. G. P. Hayden, of Nemaha county; Hon. C. H. Luling, of Sedgwick county; Hon. S. C. Martin, of Rawlins county; Hon. A. Sarbach, of Jackson county; Hon. W. T. Short, of Cloud county; and Hon. W. H. Weldon, of Clark county. They were escorted through the classrooms, shops and laboratories by Rep. F. M. Emmons, of Riley county, and Pres. E. R. Nichols. The entire party was more than satisfied with their view of the institution and will doubtless give material proof of it by pushing our bill along. Representative Hallett was accompanied by his wife.

The liquid air lecture at the opera-house, by Professor Roberts, last Monday evening, was a success in every particular. Everybody was eager to learn about the new discovery and the house was crowded to the last seat. Prof. B. F. Eyer, of the chair of physics, had secured the lecture at considerable risk, as it cost nearly \$260 to secure it for Manhattan, but his class in advanced physics worked hard to advertise it, and there was a small surplus after all expenses had been met. The revelations made by the lecturer were astonishing, even to students of science. It seems that there is no limit to the possibilities of the practical application of this very simple liquid. The professor spoke of its cheap and inexpensive preparation and transportation, its uses in cold-storage work, and its uses in the endless field of applied mechanics, where it will probably within a short time supply the chief motive power and drive the steam-engine out of the manufacturing plant and from the railroad. He also pointed out its possible uses in the hospital, and spoke of its probable value as an "explosive substance." The lecturer proved his assertions by very interesting experiments and demonstrations. He showed that it will freeze mercury and alcohol; that it will boil on a cake of ice; that it will not stain or wet immersed substances, and that it will "evaporate" rapidly in ordinary temperatures. The advanced classes in physics and their professors occupied the rostrum behind the lecturer and had the benefit of close observation, though the experiments were performed so that everyone in the opera-house could plainly see all that was going on. On Tuesday morning Professor Roberts visited chapel and upon request gave another brief lecture, with several interesting experiments, to the whole body of students. Their frequent applause showed that his efforts were highly appreciated. He said that the new liquid was coming into use very fast, that half a dozen large plants were in process of erection in different cities, and that its commercial price had been reduced, within about two years, from several thousand dollars per gallon to two and one-half cents. He predicted its rapid introduction into many great industries and the consequent transformation of many conditions of daily life.

THE INDUSTRIALIST.

i

WEATHER REPORT FOR JANUARY, 1901.

Temperature.—The mean temperature was 31.47°, which is 5.14° above normal. There have been 8 warmer and 32 colder Januaries in the past 43 years. The highest temperature was 62° on the 23d; the lowest, -2° on the 13th—a monthly range of 64°. The greatest daily range was 35° on the 7th the least 0° on the 8th. The mean daily range was 20.29°. The warmest day was the 20th, the mean being 50.5°; the coolest the 2d, the mean being 10°. The mean of the daily maxima was 41.61°; of the daily minima, 21.32°.

Barometer.—The mean pressure for the month was 28.91 inches, which is normal. The maximum was 29.36 inches at 7 A. M. on the 2d, the minimum 28.52 inches at 7 A. M. on the 15th—a monthly range of 0.84 inches.

Cloudiness.—The per cent of cloudiness was 23, which is 17 below normal. Three days were cloudy, eight partly cloudy, and 20 were clear.

The following table gives comparisons with preceding 43 Januaries:

JAN.	Number of Rains.....	Rain in Inches.....	Per cent of Cloudiness...	Prevailing Wind.....	Mean Temperature.	Maximum Temperature	Minimum Temperature	Mean Barometer.	Maximum Barometer..	Minimum Barometer..
1858.....	3	1.11	...	...	25.96	56	-16	...	...	...
1859.....	4	1.50	49	SW	31.03	59	-3	...	...	...
1860.....	1	.60	36	SW	29.97	70	-6	...	...	...
1861.....	3	1.35	41	SW	23.61	60	-9	...	...	...
1862.....	3	1.50	53	NW	18.03	42	-6	...	...	...
1863.....	2	1.47	40	SW	36.52	69	-4	...	...	...
1864.....	3	.44	51	NW	23.17	60	-13	...	...	...
1865.....	2	.33	51	NW	27.04	49	-5	...	...	...
1866.....	...	...	...	...	...	...	...	...	...	...
1867.....	2	.65	50	N	22.57	47	-12	...	...	...
1868.....	2	.31	43	SW	18.15	61	-12	...	...	...
1869.....	8	1.15	42	SW	30.46	54	9	...	...	...
1870.....	2	.05	44	SW	27.35	58	-3	28.79	29.30	27.90
1871.....	4	.53	52	SW	28.85	62	-1	...	...	...
1872.....	2	.13	40	SW	24.90	51	-8	...	...	...
1873.....	5	.84	35	SW	19.66	49	-14	...	...	...
1874.....	2	.50	58	SW	26.43	60	-4	28.74	29.35	27.95
1875.....	3	.22	57	NW	14.87	48	-17	28.89	29.43	28.42
1876.....	0	.00	11	SW	33.85	62	-7	28.82	29.37	28.30
1877.....	4	.66	48	SW	25.20	64	-11	28.97	29.55	28.38
1878.....	6	2.35	50	NW	33.09	55	0	28.76	29.25	28.41
1879.....	...	...	...	...	...	...	...	...	...	...
1880.....	3	.56	54	SSW	37.82	61	15	28.55	29.10	28.05
1881.....	4	.55	61	SW	19.35	49	-18	28.70	29.19	28.10
1882.....	4	.42	59	SW	31.64	60	-1	28.72	29.23	28.20
1883.....	4	.33	58	SW	18.02	55	-15	28.78	29.14	28.08
1884.....	1	.30	38	SW	21.46	63	-22	28.78	29.30	28.20
1885.....	4	1.08	34	SW	16.27	44	-18	28.68	29.10	28.00
1886.....	5	1.36	52	NW	12.35	51	-19	29.01	29.50	28.53
1887.....	4	.68	28	SW	22.05	62	-23	28.92	29.56	28.26
1888.....	2	.65	22	N	15.42	63	-26	29.24	29.86	28.60
1889.....	3	.78	25	N	27.84	53	-1	29.03	29.39	28.44
1890.....	5	2.31	35	NW	23.10	62	-19	29.04	29.55	28.40
1891.....	4	1.63	42	NW	30.79	57	2	28.97	29.33	28.47
1892.....	4	.78	18	SW	23.84	64	-26	29.01	29.36	28.56
1893.....	1	.02	26	N	23.39	53	-1	28.90	29.33	28.39
1894.....	2	.71	29	N	27.44	74	-14	28.92	29.52	28.45
1895.....	6	.69	35	N	23.71	72	-8	28.86	29.57	28.30
1896.....	5	.31	49	SE	23.16	65	-1	28.92	29.57	28.50
1897.....	6	1.32	44	N	27.74	58	-5	28.94	29.40	28.21
1898.....	5	.91	40	N	31.45	58	10	28.92	29.51	28.45
1899.....	4	.15	29	S	29.16	59	-9	28.95	29.46	28.49
1900.....	1	.12	30	SW	33.29	65	1	29.00	29.38	28.65
1901.....	1	.38	23	N	31.47	62	-2	28.91	29.36	28.52
Sums.....	139	31.73	1582	.....	1079.47	.....	.....	808.72	.....	.....
Means.....	3	.77	40	.....	26.33	.....	.....	28.90	.....	.....

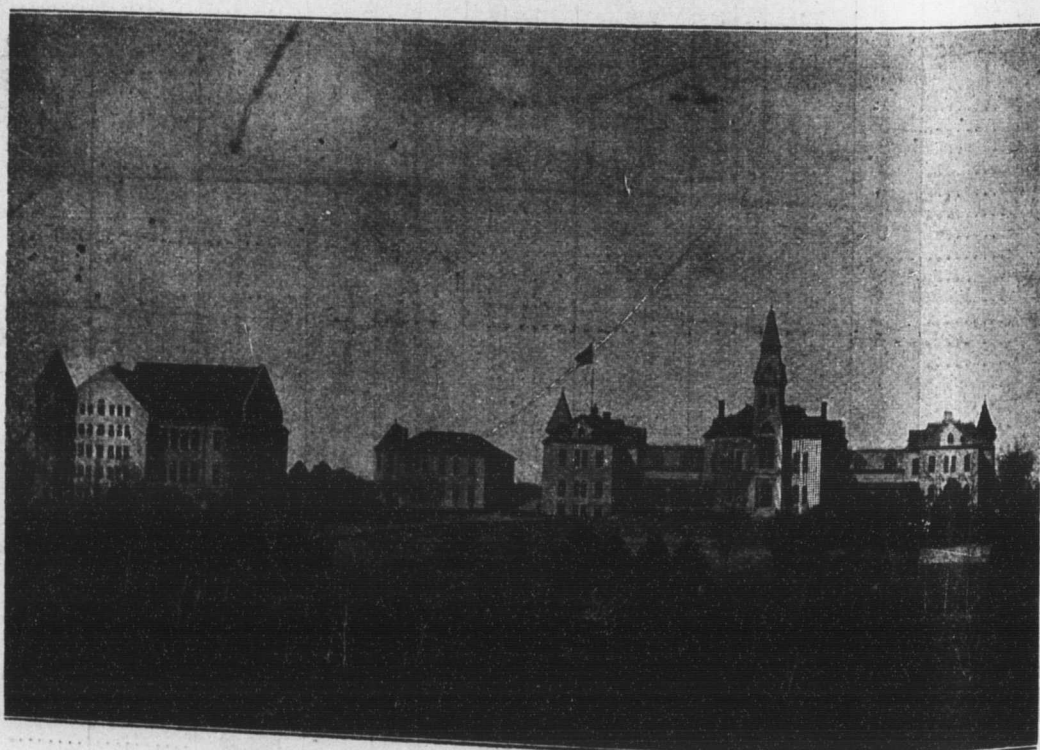
Rainfall.—The total rainfall was 0.38 inch, which is 0.39 inch below normal. There have been 29 Januarys with more rainfall and 11 with less.

Wind.—The wind was from these directions the following number of times: North 21, northeast 0, east 0, southeast 5, south 11, southwest 17, west 2, and northwest 6. The total run of wind was 6567 miles, which is 165 miles below normal. This gives a mean daily velocity of 211.84 miles and a mean hourly velocity of 8.84 miles. The maximum daily velocity was 457 miles on the 20th; the minimum, 52 miles on the 2d. The maximum hourly velocity was 31 miles from 9 to 10 P. M. on the 19th.

WIND RECORD.

JANUARY.	Total Miles.....	Mean Daily.....	Maximum Daily.....	Minimum Daily.....	Mean Hourly....	Maximum Hourly....
1890.....	5980	192.90	419	64	8.04	28
1891.....	6842	220.71	691	79	9.20	56
1892.....	6517	210.23	460	31	8.76	29
1893.....	6667	215.06	496	55	8.96	36
1894.....	7774	250.77	413	90	10.45	33
1895.....	6429	207.39	478	43	8.64	32
1896.....	6731	217.13	450	92	9.05	30
1897.....	8209	264.81	756	69	11.03	41
1898.....	5167	166.68	380	40	6.94	35
1899.....	8284	267.23	701	87	11.13	41
1900.....	5620	181.29	387	52	7.55	29
1901.....	6567	211.84	457	52	8.84	31
Sums.....	80787	2606.04	.....	.....	108.59	.....
Means.....	6732	217.17	.....	.....	9.05	.....

ERNEST R. NICHOLS, *Observer.*



Volume 27.

Number 18.

THE INDUSTRIALIST

ISSUED WEEKLY BY

KANSAS STATE
AGRICULTURAL COLLEGE

☆ ☆

Editor-in-Chief,

Pres. E. R. Nichols

Local Editor,

Prof. J. D. Walters

Alumni and Former Students,

Prof. J. T. Willard

☆ ☆ ☆

Published by
PRINTING DEPARTMENT
J. D. Rickman, Supt.

Entered at post-office, Man-
hattan, Kan., as second-class
matter. Act of July 16, 1894.

Historical Society

BOARD OF INSTRUCTION.

ERNEST R. NICHOLS, A. M. (University of Iowa), President.....	631 Poyntz avenue
JOHN D. WALTERS, M. S. (Kansas State Agricultural College).....	North end of Sixth street
ALEXANDER B. BROWN, (Boston Music School), A. M. (Olivet).....	817 Houston street
JULIUS T. WILLARD, M. S. (Kansas State Agricultural College).....	1211 Moro street
ALBERT S. HITCHCOCK, M. S. (Iowa Agricultural College).....	College Hill, 2 miles N. W. of College
FREDRIC A. METCALF, O. M. Superioris Honoris (Emerson Coll. Oratory).....	728 Poyntz avenue
GEORGE F. WEIDA, Ph. D. (Johns Hopkins).....	517 Fremont street
HENRY M. COTTRELL, M. S. (Kansas State Agricultural College).....	College Campus
MISS MINNIE A. V. NELLIE STONER, (Boston N. S. of H. A.), B. S. (S. D. A. C.).....	5 S. Juliette ave
Professor of Mechanical Engineering, Superintendent of Shops.	
EDWIN A. POPENOE, A. M. (Washburn).....	Seventh and Osage streets
Professor of Horticulture and Entomology, Superintendent of Orchards and Gardens.	
FRANK C. LOCKWOOD, Ph. D. (Northwestern).....	Fourth and Osage
BENJ. L. REMICK, Ph. M. (Cornell College).....	Fourth and Osage
BENJ. F. EYER.....	512 Houston street
C. E. GOODELL, A. M. (Franklin).....	626 Houston street
SEPTIMUS Sisson, S. B. (Chicago), V. S. (Toronto).....	Cor. Manhattan avenue and Moro
TAIT BUTLER, V. S. (Toronto).....	527 Poyntz avenue
MISS HARRIET HOWELL, (Pratt Institute).....	5 S. Juliette avenue
JOSHUA D. RICKMAN, I. T. U.....	911 Osage street
MISS JOSEPHINE T. BERRY, A. B. (Kansas University).....	801 Poyntz avenue
B. S. MCFARLAND, A. M. (Miami).....	415 Pierre street
MISS GERTRUDE WILLIAMS.....	5 S. Juliette avenue
MISS LORENA E. CLEMONS, B. S. (K. S. A. C.), Secretary.....	Corner Fourth and Laramie
D. H. OTIS, M. S. (Kansas State Agricultural College).....	College Hill
WILLIAM ARCH MCKEEVER, A. M. (Kansas University).....	621 Houston street
MISS JOSEPHINE C. HARPER, Instructor in Mathematics.....	Corner Sixth and Pierre streets
MISS ALICE RUPP, (Indiana State Normal), Instructor in English.....	620 Houston street
CHARLES EASTMAN, Cadet Major and Acting Commandant.....	611 Poyntz avenue
William L. House, Foreman of Carpenter Shop.....	Corner Sixth and Colorado
Chas. W. Pape, M. S. (K. S. A. C.), Ass't in Zoölogy and Ass't Curator Museum.....	918 Osage st
R. W. Clothier, M. S. (K. S. A. C.), Assistant in Chemistry.....	Fremont, between Fifth and Sixth
Margaret J. Minis, Assistant Librarian.....	Fourth and Moro streets
R. H. Brown, M. T. (Kan. Con. of Music), B. S. (K. S. A. C.), Ass't in Music.....	817 Houston street
J. M. Westgate, M. S. (K. S. A. C.), Assistant in Botany.....	Cor. Manhattan avenue and Vattier
May Secrest, B. S. (K. S. A. C.), Assistant in Domestic Art.....	Cor. Leavenworth and Seventh
Wm. Anderson, B. S. (K. S. A. C.), Assistant in Mathematics.....	Cor. Humboldt and Juliette ave
Gertrude Barnes, Assistant Librarian.....	Cor. 9th and Moro
Albert Dickens, B. S. (K. S. A. C.), Assistant in Horticulture.....	Fremont and Manhattan avenue
William Baxter, Foreman of Greenhouses.....	
J. G. Haney, B. S. (K. S. A. C.), Ass't in Feeding and Field Experiments.....	Manhattan ave and Kearney
Mary Pritner, B. S. (K. S. A. C.), Assistant in Domestic Science.....	Cor. 7th and Leavenworth
Theodore Lindquist, M. S. (Northwestern), Ass't Physics.....	Cor. Fifth and Humboldt
W. M. Sawdon, B. S. (Purdue), Assistant in Mechanics.....	Juliette and Houston
Ada Rice, B. S. (K. S. A. C.), Assistant in Preparatory Department.....	Osage and 8th. street
Louis Wabnitz, Foreman Iron Shops.....	5th and Osage
Henry Van Leeuwen, (Univ. Wis. D. S.) Inst'r in Cheese Making.....	Manhattan and Kearney
E. W. Curtis, (Univ. Wis. D. S.) Instructor in Butter Making.....	
Florence L. Grant (Mass. Normal Art School), Assistant in Drawing.....	Fourth and Osage
A. T. Kinsley, B. S. (K. S. A. C.), Assistant Veterinary Department.....	Tenth and Kearney sts
Elizabeth Agnew, B. S. (K. S. A. C.), Assistant in Domestic Science.....	Ninth and Moro streets
Jesse B. Norton, B. S. (K. S. A. C.), Assistant in Entomology.....	
E. C. Gasser, Foreman of Foundry and Blacksmith Shop.....	
Ina E. Holroyd, B. S. (K. S. A. C.), Assistant in Preparatory Department.....	9th and Moro
Jacob Lund, M. S. (K. S. A. C.), Engineer.....	Cor. Tenth and Kearney
C. Jeanette Perry, B. S. (K. S. A. C.), Executive Clerk.....	Corner Colorado and Fifth
Alice Melton, B. S. (K. S. A. C.), Clerk in Director's office.....	
W. R. Lewis, Janitor.....	
Archle Huycke, Secretary to President.....	N. E. corner Main College Building
	Manhattan avenue and Kearney

THE INDUSTRIALIST.

VOL. 27.

MANHATTAN, KAN., FEBRUARY 12, 1901.

No. 18

CHINA.

PROBABLY most people would be inclined to look upon the recent difficulties in China as an unmixed evil. But it is doubtful if after all such is the case. There seems to be at least one good result already manifest, namely, an awakened interest on the part of the whole world regarding China. Hitherto China has been a subject of interest only, or mainly, for the diplomats. Few indeed among the masses knew exactly, or cared to any extent, just what was going on in that far-off country. Now almost nothing in the way of information about China and the Chinese problem escapes an aroused and eager public. There are, however, for the general reader, many points left obscure by the daily press—his usual source of information. Some of these are quite important to an understanding of the Chinese question as it presents itself to-day. One of these is the nature and practical operation of the Chinese government.

Every one probably knows that the form of government is a monarchy. More than that, it is in theory an absolute monarchy—a theocracy, indeed, which is the most absolute form of absolutism. The Emperor of China is the Son of Heaven. He is responsible alone to God. In practice, however, he is not as powerful as this would seem to indicate. One of the first limitations appears in the fact that he is seldom expected to take the initiative in matters of government. Projects are, as a rule, submitted to him, and by him referred to the board concerned for further consideration and report. It is true he is practically unrestricted in the appointment and removal of these various boards. Still the fact that he is expected usually to act through some board, instead of acting directly, must necessarily be regarded as a serious check on despotic authority.

Another limitation appears in the fact that China has not a consolidated government. Its government is perhaps more nearly federal in form than anything else. It is composed of

eighteen states, or provinces, each enjoying, so far as the general government is concerned, much the same independence in local affairs as do our own states. That is, while the emperor appoints and removes at pleasure the governors of these provinces he makes no attempt to oversee the local administration. Two things are rigidly required of the governor, and beyond this, ordinarily, the emperor is not in the least concerned with the internal affairs of the eighteen provinces. He expects the governor to secure peace within and pay the annual tribute.

There is another equally important limitation on the despotic power of emperor and governor alike. This is found in custom. It is hard, perhaps, for Americans to realize the full importance of custom in molding governments and safeguarding the liberties of the people. We constantly look to written laws for these safeguards, and especially written constitutions. Indeed, we are apt to think the latter the only reliable safeguards against absolute power. Yet England, one of the freest nations in the world, has no written constitution to-day, and never has had. More than that, some of the features of the English government which are most highly valued by the people can find no authorization whatever in written law of any kind, but rest wholly on custom. Of course, custom may be in favor of, as well as against, royal despotism. But it is never wholly against the people, and to the extent that it is against despotic power it forms the most reliable of all conceivable safeguards. This for the reason that a constitution must be interpreted and applied. But custom never needs interpretation. And because it is familiar to the people it can never be misapplied without their knowledge and at least tacit consent.

We see, then, at least three quite important limitations on arbitrary power in connection with a government that is usually looked upon as, and in theory indeed is, without limitation of any kind.

Another interesting phase of the Chinese government is found in the methods of redress to which the people resort when they disapprove of the policy of a local official as burdensome or contrary to custom. The means employed are very simple and usually fairly effective, provided, of course, public sentiment is sufficiently aroused to carry them out completely. In the first place, the Chinese enjoy a certain kind of liberty in criticising the

government which could hardly be duplicated anywhere else in the world. Certainly it is not our conception of the right of free speech. But it is doubtful if ours is any more effective, at least as against local officers. Our great dailies and other periodicals, together with the stump, are the channels open to us through which we may express our disapproval; always, of course, in moderately respectful language, and certainly taking the risk of a suit for libel. But the Chinese community that is dissatisfied with a local official is bound by no such limitations and assumes no such responsibilities. Periodicals are not thought of as a means of giving voice to their dissatisfaction, but placards are. To be sure, they are anonymously written and secretly posted. But the matter does not end here. If it did, it is possible the person for whom they are intended would pass them by unnoticed. But the populace sees to it that nothing of that sort happens; for the very first time the offending official appears on the street in the vicinity of one of these placards he will find there an interested company, waiting to give him the full benefit of the sentiment of the placard. It matters not how serious the charges or how scurrilous the attack he is sure to get, as he moves along, the whole thing, with perhaps some additions now and then freely injected by the populace itself. It is safe to say the journey about town of such an official is far from being a pleasant one.

But sometimes the grievance is too great for the populace to restrain itself to a mere verbal attack, and yet the wrong suffered is not sufficient to justify revolution. What then will be the means resorted to by the community for the purpose of impressing the government with its dissatisfaction with its local representatives? Very likely the spirit of discontent will manifest itself in a mild form of insurrection, but in a way that is usually quite effective if the end sought is merely a change of officials. When public sentiment has become sufficiently stirred up against the local officer, he will probably be literally taken in hand by the populace. He is perhaps not exactly mobbed. He is not tarred and feathered and ridden out of the country, as perhaps he deserves. More likely his retribution will come in this shape. Some fine morning when he is enjoying an outing in his sedan chair he will be met, at a safe distance from home, by a reception committee, informally collected. This committee will stop his chair and proceed not too tenderly to remove him therefrom. His boots will then be

unceremoniously removed and he will next find himself rolling in the gutter. He is now completely disgraced and his recall is certain. Of course, in more serious cases of dissatisfaction with the government generally, there is the resort to revolution. And China is well called the "classic home of revolutions."

A word now as to the resources of the country. In natural resources, China is one of the richest countries in the world. Her mineral wealth can scarcely, as yet, be accurately estimated, so vast are the regions still practically unknown in this way. The whole region north of the Hoang Ho, for instance, is a vast field of coal and iron. The very best grades of coal are found in different sections of the country. The province of Shansi is one of the richest in this mineral, apparently. Experts have estimated that at the present rate of consumption there is enough coal in this one province to supply the whole world for a thousand years. This may be an exaggerated view, but no doubt the supply is very great. The mineral wealth of Yunnan and Kweichau is also very great and quite varied. Not only is coal found there in abundant quantities, but also salt, lead, iron, tin, zinc, copper, sulphur, mercury, etc.

As yet, China has made little or no use of her vast resources. Mines are almost undeveloped. Little has been done in the way of manufacturing according to improved methods. There are good reasons for this condition of things. In the first place, there is need of roads. So far the streams are practically the only means of communication with the distant provinces. Even ordinary wagon roads apparently are wanting. All along, the Chinese have manifested an intense hostility to the building of railroads, so that, as yet, only a few hundred miles have been built and operated. Before China can be developed industrially, of course, there must be at least a fair system of roads for easy and economic transportation of products.

Another thing evidently is needed before China will be industrially developed—organizing ability. No where, apparently, do the Chinese manifest a talent for organization and operation. In politics they are mere opportunists, always waiting till the emergency comes before making an effort to meet it, then trusting to luck to come out all right. The same spirit applied to business must inevitably defeat every great enterprise. At any rate, they have not as yet demonstrated to the world their ability to organ-

ize and successfully operate a great business enterprise of any kind. On the other hand, Chinese labor is fairly skilled, while the laborer is the most easily satisfied of any in the world, so far as physical comforts are concerned. He can live on less apparently than the laborer of almost any other nation. His powers of endurance also seem unsurpassed, if indeed they are equaled by any intelligent class of laborers in the world outside of China. Hot or cold, moist or dry weather seems a matter of utter indifference to him. He seems to be just as efficient in the one case as in the other.

These facts force one reflection upon us, and with this we conclude this sketch. What are going to be the results for Europe and America if China is some day industrially developed? When western executive and organizing power, as well as western capital, are applied to her vast natural resources, when the cheap and apparently efficient labor of China is thus utilized to the best advantage, is it possible that western nations will then find they have at last succeeded in arousing a sleeping giant? Is it possible we ourselves shall be outstripped in the race for the markets of the world—find ourselves supplanted by this now despised nation of the Orient? It is to be hoped that no such result will follow the present shaking-up the Powers are giving China. We want open ports and plenty of trade with China, in which there is great profit just now. Are we prepared to welcome so heartily Chinese competition, should it come in the form and under the circumstances indicated?

But it must not be supposed the writer of this is opposed to proper efforts being made to get at the resources of China, which she refuses to develop herself. Even though it work a hardship for a time—and possibly for a very long time—for some nations, in the end no doubt the world will be greatly benefited; just as it has been benefited by the improved processes of manufacture, which in a like manner have brought great hardships to certain laboring classes. All in the end will be properly adjusted, no doubt.

C. E. GOODELL.

The Farm Department is indebted to Alex. Galbraith, Janesville, Wis., secretary of American Clydesdale Association, for Vol. VIII of the American Clydesdale Stud Book. This book has information of special interest to our short-course students in regard to Clydesdale horses.

THE FORT HAYS RESERVATION.

THE seven thousand six hundred acres of land in the Fort Hays reservation includes land characteristic of all the various kinds of soil in the western half of the United States. The stream on the north runs for eleven miles within the bounds of the reservation and is lined the entire length with the best growth of native timber to be found between Salina and the Rocky Mountains. A wide, rich bottom follows the stream and from this bottom the land rises in an easy slope to the southwestern part of the reservation, where it forms high upland, in some places rough and considerably broken. In the quality of the land and in large areas, this is the finest body of land ever made available for farm experiments. The Fort Hays reservation gives the finest opportunity ever offered for field tests on a large scale that are applicable for the farmers of the entire western half of the State.

Most of the reservation is covered with a good growth of the grasses peculiar to western Kansas. Near the town, this has been severely pastured. This grass land offers, on a large scale, an opportunity to show by public tests the high feeding value of the "short grasses," the best methods of handling them to secure heavy pasturing, and at the same time keep up the vitality of the grasses. Such experiments would increase in value every acre of grass land in the entire short-grass region. The over-pastured land gives an opportunity to develop the best methods of renovating and renewing native meadows. It is needless to speak of the value of such work as every one familiar with the conditions of western Kansas knows that the improvement and renewal of native pastures is a most vital question.

In almost every county in the western half of the State, thousands of acres are under plow that the owners would seed to grass if this could be successfully done at a reasonable cost. There is no place in the State at present, nor in the United States for that matter, where practical tests of grasses can be made under the conditions prevailing in the short-grass region. The Fort Hays reservation offers ideal conditions for developing grass growing in western Kansas and the area is sufficiently large to permit a test large enough to make it acceptable to the farmers of that part of the State. Promising wild and tame grasses could be grown, seeding ten acres to each variety. The successful sorts in this trial could then be seeded in fields of one hundred to five hundred

acres each and thorough tests made with each sort in regard to its worth for pasture and hay and the best methods of seeding and maintaining it. The reservation affords the opportunity of making these tests on soils ranging from rich, level bottom-land to high and broken upland. The results obtained by such trials would be applicable to the entire western half of the State and the cost of making them would only be a fraction of what is now being spent in single counties in the effort of individual farmers, and as a rule these private experiments on a limited scale bring small results.

Experiments made at the Kansas Experiment Station indicate that we have drought-resisting crops, that properly raised and fed will produce as much beef, pork and milk per acre in that part of the State where the rainfall is light as is now being produced in the eastern part of the State with the heavy rainfall. A thousand acres of these crops raised and fed yearly on the Fort Hays reservation would demonstrate the fact on such a scale that it would attract attention to the entire western half of the State and make that as successful a feeding section as any in eastern Kansas, Iowa, or Illinois.

Danish bacon sells in the English market for double the price of the best American bacon. Its peculiar flavor is produced by fattening the hogs on barley. Barley does not grow well in eastern and central Kansas. It is one of the surest grain yielders in western Kansas. A large area of barley grown on the Fort Hays reservation would show what are the best varieties and best methods of raising it. The crops fed on the reservation to fatten hogs and these hogs shipped in large numbers to our packers would enable them to show to the world the high qualities of meats from western Kansas feeds. This work would open to the western half of the State the highest markets of the eastern states and of Europe and make western Kansas one of the most profitable feeding sections of the world.

Feeding experiments on the Fort Hays reservation with barley on a large scale would open to western Kansas a profitable market for barley with the feeders in the corn belt, inducing them to use barley to supplement ordinary feeds when the corn crop was short.

The soil and climate of the Fort Hays reservation is that of the wheat-growing section of the State. The wheat growers have found it necessary to send to Russia for new seed because they think their own is becoming softer, lighter in color and yielding

less. It is a settled fact that seed properly bred up in a certain section is better adapted to that section than equally as well bred imported seed that must be acclimated. The large area in the Fort Hays reservation offers the best possible place to breed, cross and select wheat that will give the greatest yield under Kansas conditions of soil and climate and be of the highest quality.

There is no doubt that certain methods of packing the soil insure a much larger yield of wheat per acre under ordinary conditions than is secured by the usual method. Last year a farmer in a county adjoining that in which Fort Hays reservation is situated secured thirty-three to forty bushels of wheat per acre where the soil was packed and thirteen bushels per acre where it was treated in the ordinary way. These methods publicly demonstrated in large fields on the Fort Hays reservation would induce wheat growers throughout the State to adopt them and would secure an increase in each wheat-growing county ten-fold more than the entire cost of running an experiment station on this reservation.

H. M. COTTRELL.

FORM IN TREES.

AS THE time for the annual revival of interest in tree planting comes round, it is worth while to give some thought to the trees that we have. Arbor Day is a good institution, so are Fourth of July and Thanksgiving, and as we try to be good citizens and appreciate our mercies and blessings all other days in the year, so ought we to keep the spirit of Arbor Day in our minds.

The proper shaping and training of a tree is a matter requiring no little judgment. Not only must we have the right ideas of proportion and symmetry, but we must appreciate the mutual dependence of roots and branches, and respect the laws of supply and demand which govern their development. We must recognize, too, that trees are creatures of circumstance, and not expect Kansas conditions to produce trees similar to those produced by the very different conditions existing in the Atlantic or lake states. Some of our most favorably located cities may in time have street trees rivalling those of the classic avenues of New Haven and Rochester, but many more must be content with trees of other types.

Our trees may not attain the height that we think we desire, but they will probably be of more service to ourselves, our neighbors, and the passing public. Nor will we say that they are less beautiful. Any well-formed, healthy tree has a beauty of its own. It fills a place in the economy of nature and in landscape effect that another shape or size cannot fill; and whether it is more or less beautiful than a tree of a different type is a matter of taste. It is useless to try to make a tree in a high and dry location take the form of the same species grown in entirely different surroundings. The tree tries to adapt itself to conditions; will often shorten its stem and branch lower that it may withstand the winds and shield its trunk and the soil from the burning sun. If we work with nature and compromise our ideal with her necessities, the results will be more satisfactory.

When we assume a part of nature's work toward the tree, we cannot afford the extravagance she indulges in growing a fine specimen. But in most cases we must follow her plan of planting more than we expect to retain permanently. We plant thickly in order to sooner secure some showing for our work and to provide conditions favorable to growth. When the plan is well thought out and we have planted our oaks, pines, and other especially desirable species among more common sorts, the problem is a simple one of elimination, cutting out the nurse trees as the trees intended for permanent planting require the room and sunlight. Sometimes the trimming up of the nurse trees will give the needed conditions for several years. When the question is one of saving the best specimens of a clump of one species, it usually demands more careful consideration. The probable growth of a tree for the ensuing five, ten, or a longer term of years, is not always easy to calculate. It is frequently surprising to see how soon a clump, which we thought well scattered, becomes crowded. To a lover of trees, it is a real grief to be compelled to choose between two fine trees, both well formed and vigorous, but too close for further proper development. This is sometimes mitigated by moving one to another situation, but the moving of a tree of any size is a difficult and expensive operation, and even when most carefully done often fails.

The most difficult and discouraging task confronts him who has to deal with trees that have been long neglected. Great improvement may be obtained in a few years by carefully selecting

those that are to remain, and by cutting back slightly induce a better growth where it is needed. Usually it will be dangerous to do all the thinning in a single season. It is too great a change, and the parts unused to much direct sunlight are seriously injured. Part of the tops may be cut away, and in a few years great improvement made. Many times it will be much more satisfactory to treat the group or clump as a unit. Then, of course, each tree must be regarded as a part of the plan and treated accordingly.

Too much care cannot be given to the pruning itself. Many trees in our parks and along our sidewalks have a pitiful, mutilated appearance, and this can hardly be otherwise where men who are not proficient with even a buck-saw and ax do the pruning, and the man's work is judged by the brush on the ground rather than by the appearance of the tree. The small blade of a knife is the best tool for pruning; but when it is not used in time the shears and saw will do the work with least injury to the tree and the eye. He who hesitates about cutting away large branches is not so liable to be lost as is he who saws away with the size of the wood pile rather than the welfare of the tree and the pleasure of the public in view. The man who neglects and afterwards mutilates plantings made in a commercial way usually has his punishment in loss of value, and these plantings are not usually in locations where the æsthetic taste is liable to serious shock. But for those in charge of street or park plantings who allow or authorize the neglect or mutilation of trees which are intended for ornamental purposes, there is no adequate punishment pecuniary or mental, provided. An object which offends the eye is surely no less a nuisance than one repulsive to the nose, or which grates upon the ear. Considered less, perhaps, but who shall say that anything which may make or mar the artistic and æsthetic in our natures is not important and deserving of the best thought of every community. A well-formed, symmetrical tree or group of trees is a picture, pleasing to the eye and restful to the mind. A malformed, mutilated tree gives rise to feelings that may vary from shame for their appearance to a desire for revenge upon the author of their disgrace. The "formative influences" that mould character cannot be isolated and measured, but the prose and poetry of trees is certainly not less readable than the "sermons in stones."

A. DICKENS.

THE INDUSTRIALIST.

Published weekly during the College year by the
Printing Department of the

KANSAS STATE AGRICULTURAL COLLEGE. Manhattan, Kansas.

☆ ☆ ☆

Pres. E. R. NICHOLS..... Editor-in-Chief
Prof. J. D. WALTERS..... Local Editor
Prof. J. T. WILLARD..... Alumni Editor

BOARD OF REGENTS.

HON. E. T. FAIRCHILD, President.... Ellsworth
HON. J. S. McDOWELL, Vice-President, Smith Center
HON. W. T. YOE, Treasurer..... Independence
HON. WM. HUNTER, Loan Comm'r, Blue Rapids
HON. MRS. SUSAN J. ST. JOHN..... Olathe
HON. CARL VROOMAN..... Parsons
HON. J. M. SATTERTHWAITE..... Douglass

PRES. E. R. NICHOLS, Sec. *ex-officio*.

LOCAL NOTES.

Professor Walters is working up sketches for the new addition to the library.

President Nichols spent one day last week at Topeka looking after our deficiency appropriation bill.

Miss Gertrude Williams, the new instructor in calisthenics, took charge of her department on February 1.

The mid-term examinations are over and the Faculty members are busy figuring out averages, while the students are anxiously awaiting the results.

The "big snow" of the past week has not interfered much with the attendance at classes. Our students are not afraid of a snow. "It's just fun," they say.

The pay-roll for January amounted to \$6016.11. Of this sum the students received \$869.95, the employees \$302.71, the Station officers \$777.09, and the College officers \$4065.36.

The secretary-treasurer of the American Durco-Jersey Association, R. J. Evans, El Paso, Ill., has donated Vol. VI Durco Jersey Swine Record to the Farm Department for use in classes.

The concert by the Ottumwas Male Quartet, February 7, was highly appreciated by a full chapel. The next and last number of the College lecture course will be given by Rev. Thomas McClary, on March 15.

A. J. Temple, Cameron, Ill., secretary of the American Leicester Sheep Association, has donated to the Farm Department Vols. 1 and 2 of the *American Leicester Record*, and will mail us regularly other volumes as they are issued.

Assistant O. I. Purdy, of the Printing Department, has left College for St. Joseph, Mo., where he expects to find a more remunerative position. He has not written as yet where he works. Purdy is a trustworthy young printer who deserves a good job.

Applications for farmers' institute for next summer and fall are already being received. Last week the Brown County Farmers' Institute sent in a request that College speakers be sent to an institute to be held at Hiawatha in September or October.

The storm interfered somewhat with the monthly Manhattan stock sale Saturday. The sales company, however, sold some fine horses at the Manhattan Transfer Company's barn in the afternoon at a good price. Buyers were here from different parts of the country.

The Faculty of the Agricultural College was represented at the funeral of Mrs. Streeter, of Milford, the mother of Miss Anna Streeter, '99, by Assistants J. G. Haney and Lizzie Agnew. Mrs. Streeter was the daughter of Hon. Mr. Fullington, of Bachelor, who, in February 1863, as the representative of Riley county, framed and introduced the bill locating the Agricultural College at Manhattan.

The dairy school received during the month of January 51,298 pounds of milk and 7735 pounds of cream. The milk included the entire amount produced by the patrons of the Manhattan creamery. The cream was supplied by L. W. Turner and by the skimming stations at Stockdale, Rossville, Paxico, and Alta Vista. From this milk and cream 5118 pounds of butter and 90 pounds of cheese were made. Ninety-five students received instruction in this work during the month.

January 31 and February 1 Professor Willard and Miss Pritner attended the farmers' institute at Berryton. This meeting closed the farmers' institutes for the year ending June 30, 1901. During the past seven months the College force have taken part in one hundred fifty-six farmers' institutes, these having a total attendance of 64,031 people. It has been the most successful institute year in the history of the College. The attendance was more than double that of any other year.

The dairy school is giving the eighty-three members of the class very thorough work on hand cream separators. This is in addition to the regular work with the power machines. Within the last two years the use of the hand separator has wonderfully increased, there being about 1000 machines run every day at the present time in the State, and that number being rapidly increased. The instruction is given in a practical way. Four separators of different makes are selected each day and the students are required to run an amount of milk through each machine equivalent to the amount received on the average farm.

Mr. Geo. Sexton, who will be remembered by many as the good-natured foreman of the College farm from 1896 to 1898, after which he served as engineer in the shop for a few months, was in this city for a short time January 29. He resigned the position as engineer and went to Alaska, where he has labored at various occupations until last fall, when he returned to the states. He was an official census taker in Alaska, and had many interesting experiences, as he was obliged to go where no white man had been before. He was on his way to Washington state, where he has his home, but will go again to Alaska in early spring, for he says it is a great place for making money.—*Students' Herald*.

The sudden departure of Prof. J. D. Harper has left the Department of Mechanical Engineering without a dean and the extensive shops, with its hundreds of students and many instructors, without a superintendent. To call an experienced and well-qualified man from some other institution at this time of the year would probably be impossible. It was therefore decided to leave the work of instruction of the engineering classes and general management of the shops temporarily to Assistant W. M. Sawdon, B. S. Mr. Sawdon is a young man of ability and tact, a graduate of the engineering department of Purdue University, Indiana, and in every way well qualified to do this work. He will fill the place to the satisfaction of his students and collaborators.

At 7:40 Saturday evening, February 2, F. E. Uhl called to order a meeting of the dairy class in room 210 of the Agricultural building, where they had the pleasure of listening to a paper by the chairman, on "How can I get the Most out of the Dairy Short Course?" which was discussed by E. Baumbaugh and others; then a paper by C. C. Winsler, on "Literature for the Farmer," and the discussion led by A. J. Myers which followed. After some music by H. Schowalter and D. P. Yoder, a recess was called for. This was followed by a talk on "steam boilers" by D. P. Yoder, in which connection E. W. Curtis described a submerged flue vertical boiler. The last was a well-conducted question box by Prof. D. H. Otis, after which the class adjourned to meet February 9, 1901. Fifty dairy-school boys were in attendance. The club will hold weekly meetings during the balance of the winter term.

ALUMNI AND FORMER STUDENTS.

F. E. Uhl, '96, and Maggie Correll Uhl, '97, welcome a little son, born January 31, 1901.

Harriet Nichols, '98, S. Nichols, '98, and R. T. Nichols, '99, were called home by the death of their little brother Victor. The first two will remain at home for a few weeks.

H. C. Avery, second year 1897, graduated from the civil engineering course at the University of Kansas last June, and is now topographer in a surveying party working on the line of the projected Kansas City, Mexico & Orient railway, which is expected to reach the harbor Port Stillwell or Topolobampo on the Gulf of California.

Volume one, number one, of *The Last Frontier*, a semi-monthly publication launched by the Frontier Publishing Company at Oklahoma City, has been received. C. J. Creller, formerly of this city, is treasurer of the company and J. B. Thoburn, class of '93, of the College, is secretary and editor. The paper will, after the opening of the Kiowa, Comanche and Wichita reservations, be published at or near Fort Sill.—*Nationalist*.

SOY BEANS IN KANSAS IN 1900.

(Press Bulletin No. 81, issued by Farm Department.)

Last year the Kansas Experiment Station sold soy beans for seed to farmers in sixty-five counties of Kansas. Seedsmen and many farmers also sold soy beans in different parts of the State. This was the first general trial of this new crop through the State. The season was generally unfavorable to the growth of the beans.

The Kansas Experiment Station wishes to collect all the information possible in regard to the growth of soy beans in the State during the past year and we ask that every Kansas farmer who planted soy beans last spring write us IMMEDIATELY, giving the following information:

Your name.

Post-office.

County.

Kind of soil.

Method of preparing the land.

Variety of soy beans planted.

How planted.

Time planted.

How cultivated.

Did anything injure the soy beans—and if so, what was it, and how were the beans injured?

How were the beans gathered?

Yield per acre.

What do you think of soy beans for your section of Kansas?

Please send your answers to these questions *immediately*, and address all letters to H. M. Cottrell, Kansas Experiment Station, Manhattan, Kansas.

Please send us the name, post-office and county of every other farmer in the State who you know raised soy beans last year.

We have already received many letters asking where soy beans for seed may be purchased. We have none for sale. If you have soy beans for sale, write us, giving the number of bushels offered, so that we may refer buyers to you.

The members of the military science classes had a mock court-martial trial on February 2. Corporal Green, of Company B, was charged with challenging a comrade to a duel. Judge-Advocate Lane and Quartermaster Howard were the contesting legal lights. Green was found guilty and sentenced to a "dishonorable discharge from the service." The trial was interesting and furnished amusement and instruction to a large number of spectators.

BOARD OF INSTRUCTION.

ERNEST R. NICHOLS, A. M. (University of Iowa), President.....	631 Poyntz avenue
JOHN D. WALTERS, M. S. (Kansas State Agricultural College)	North end of Sixth street
Professor of Industrial Art and Designing.	
ALEXANDER B. BROWN, (Boston Music School), A. M. (Olivet)	817 Houston street
Professor of Music.	
JULIUS T. WILLARD, M. S. (Kansas State Agricultural College)	1211 Moro street
Professor of Applied Chemistry.	
ALBERT S. HITCHCOCK, M. S. (Iowa Agricultural College) ..	College Hill, 2 miles N. W. of College
Professor of Botany.	
FREDERIC A. METCALF, O. M. Superioris Honoris (Emerson Coll. Oratory) 728 Poyntz avenue	
Professor of Oratory.	
GEORGE F. WRIDA, Ph. D. (Johns Hopkins)	517 Fremont street
Professor of Pure Chemistry.	
HENRY M. COTTRELL, M. S. (Kansas State Agricultural College)	College Campus
Professor of Agriculture, Superintendent of Farm.	
MISS MINNIE A. V. NELLIE STONER, (Boston N. S. of H. A.), B. S. (S. D. A. C.) 5 S. Juliette ave	
Professor of Domestic Science, Dean of Women's Department.	
.....	
Professor of Mechanical Engineering, Superintendent of Shops.	
EDWIN A. POPENOE, A. M. (Washburn)	Seventh and Osage streets
Professor of Horticulture and Entomology, Superintendent of Orchards and Gardens.	
FRANK C. LOCKWOOD, Ph. D. (Northwestern)	Fourth and Osage
Professor of English.	
BENJ. L. REMICK, Ph. M. (Cornell College)	Fourth and Osage
Professor of Mathematics.	
BENJ. F. EYER	512 Houston street
Professor of Physics and Electrical Engineering.	
C. E. GOODELL, A. M. (Franklin)	626 Houston street
Professor of History and Economics.	
SEPTIMUS Sisson, S. B. (Chicago), V. S. (Toronto)	Cor. Manhattan avenue and Moro
Professor of Zoölogy.	
TAIT BUTLER, V. S. (Toronto)	527 Poyntz avenue
Professor of Veterinary Science.	
MISS HARRIET HOWELL, (Pratt Institute)	5 S. Juliette avenue
Superintendent of Domestic Art.	
JOSHUA D. RICKMAN, I. T. U.	911 Osage street
Superintendent of Printing.	
MISS JOSEPHINE T. BERRY, A. B. (Kansas University)	801 Poyntz avenue
Librarian.	
B. S. MCFARLAND, A. M. (Miami)	415 Pierre street
Principal Preparatory Department.	
MISS GERTRUDE WILLIAMS	5 S. Juliette avenue
Director of Physical Training.	
MISS LORENA E. CLEMONS, B. S. (K. S. A. C.), Secretary	Corner Fourth and Laramie
D. H. OTIS, M. S. (Kansas State Agricultural College)	College Hill
Assistant Professor of Dairying.	
WILLIAM ARCH MCKEEVER, A. M. (Kansas University)	621 Houston street
Assistant Professor of English and Philosophy.	
MISS JOSEPHINE C. HARPER, Instructor in Mathematics	Corner Sixth and Pierre streets
MISS ALICE RUPP, (Indiana State Normal), Instructor in English	620 Houston street
CHARLES EASTMAN, Cadet Major and Acting Commandant	611 Poyntz avenue
William L. House, Foreman of Carpenter Shop	Corner Sixth and Colorado
Chas. W. Pape, M. S. (K. S. A. C.), Ass't in Zoölogy and Ass't Curator Museum ..	918 Osage st
R. W. Clothier, M. S. (K. S. A. C.), Assistant in Chemistry ..	Fremont, between Fifth and Sixth
Margaret J. Minis, Assistant Librarian	Fourth and Moro streets
R. H. Brown, M. T. (Kan. Con. of Music), B. S. (K. S. A. C.), Ass't in Music ..	817 Houston street
J. M. Westgate, M. S. (K. S. A. C.), Assistant in Botany, Cor. Manhattan avenue and Vattier	
May Secest, B. S. (K. S. A. C.), Assistant in Domestic Art, Cor. Leavenworth and Seventh	
Wm. Anderson, B. S. (K. S. A. C.), Assistant in Mathematics ..	Cor. Humboldt and Juliette ave
Gertrude Barnes, Assistant Librarian	Cor. 9th and Moro
Albert Dickens, B. S. (K. S. A. C.), Assistant in Horticulture, Fremont and Manhattan avenue	
William Baxter, Foreman of Greenhouses	
J. G. Haney, B. S. (K. S. A. C.), Ass't in Feeding and Field Experiments, Manhattan ave and Kearney	
Mary Pritner, B. S. (K. S. A. C.), Assistant in Domestic Science	Cor. 7th and Leavenworth
Theodore Lindquist, M. S. (Northwestern), Ass't Physics ..	Cor. Fifth and Humboldt
W. M. Sawdon, B. S. (Purdue), Assistant in Mechanics	Juliette and Houston
Ada Rice, B. S. (K. S. A. C.), Assistant in Preparatory Department	Osage and 8th. street
Louis Wabnitz, Foreman Iron Shops	5th and Osage
Henry Van Leeuwen, (Univ. Wis. D. S.) Inst'r in Cheese Making ..	Manhattan and Kearney
E. W. Curtis, (Univ. Wis. D. S.) Instructor in Butter Making	
Florence L. Grant (Mass. Normal Art School), Assistant in Drawing	Fourth and Osage
A. T. Kinsley, B. S. (K. S. A. C.), Assistant Veterinary Department, Tenth and Kearney sts	
Elizabeth Agnew, B. S. (K. S. A. C.), Assistant in Domestic Science, Ninth and Moro streets	
Jesse B. Norton, B. S. (K. S. A. C.), Assistant in Entomology	
E. C. Gasser, Foreman of Foundry and Blacksmith Shop	9th and Moro
Ina E. Holroyd, B. S. (K. S. A. C.), Assistant in Preparatory Department	Cor. Tenth and Kearney
Jacob Lund, M. S. (K. S. A. C.), Engineer	Corner Colorado and Fifth
C. Jeanette Perry, B. S. (K. S. A. C.), Executive Clerk	
Alice Melton, B. S. (K. S. A. C.), Clerk in Director's office	
W. R. Lewis, Janitor	N. E. corner Main College Building
Archie Huycke, Secretary to President	Manhattan avenue and Kearney

THE INDUSTRIALIST.

VOL. 27.

MANHATTAN, KAN., FEBRUARY 19, 1901.

No. 19

ECONOMY IN THE USE OF FOODS.

AS THE world becomes more densely populated and civilization more artificial, the study of economics becomes of vital importance. Where there is a superabundance of food, and living is in the simplicity of nature, the instinctive wants of humanity for food are easily supplied; but where the population becomes congested in a country, or from any cause the food supply is cut short, then the question of economy in its uses becomes more pressing and its solution is not only a duty but a necessity.

In our own republic, where every man is born to the highest privileges and where the stability of the government depends upon the integrity and intelligence of a free people, there should be the amplest provision made for their instruction in all branches of economics; for the status of a country depends upon its material prosperity and the development of its people. Our industrial schools, where domestic economy is a part of the regular curriculum, are one of the evidences that our people are endeavoring to instruct along this line. The special cooking schools are doing a good work, the only fault to find being that they are too few.

Economy, not only in the use of food but also in its choice, should be taught, so that each may know how and what to buy to provide for the necessary requirements of the system in the most economical way. Each should know, also, the chemistry of the materials and of their preparation and their specific uses in the system; for the great waste of food is not in the amount of actual matter thrown away, though this is large, but in the use of the wrong kinds of food. In the first instance the waste is so manifest as to be in itself an aid in correcting the evil; but in the latter the waste is more subtle, being in the lack of nourishment and not readily observed by untrained minds.

What we need is practically trained women of scientific study, who have the courage of their convictions to direct common thought into this channel of domestic economy. Let it be given

all the dignity of schools and universities, and the coming generation will find public opinion so aroused in this line of thought that it will be considered a disgrace to any woman to set before her family food of which she has no knowledge in regard to its comparative nutritive properties or suitability to their needs.

Our needs are largely met by instinct. The Esquimau eats quantities of fat to enable him to resist the cold while the tropical inhabitant lives upon glutens and fruits, easily obtained and easily digested. But while instinct will select those foods absolutely essential to preserve life under certain conditions, yet it is not a safe guide in selecting food for the best development of the higher manhood. The Esquimaux are a stupid and degenerating race and the Rice-eaters are an effeminate people. Whether a change of diet would infuse new life into the one and strength into the other is a question; but intelligent investigation will make many discoveries of value to the economist.

It has been ascertained that a man in active life requires about five ounces of nitrogenous food and twenty ounces of carbonaceous for muscle-making nutriment, while the brain and vital energies are nourished by phosphates, the amount required varying in proportion to the activities, but being much less in quantity than that of the nitrates. The phosphates which give vitality are concentrated in the germs of all seeds, so that an understanding of the properties of different foods will show which are best adapted to our needs and therefore most economical.

"If we have food containing just the proper proportion of the necessary elements, we shall eat only enough to supply the system with the necessary nourishment, but if we have food containing ten times as much of the carbonates as of the nitrates, then we shall eat twice as much of the carbonates as is required to get the necessary supply of nitrates, and this extra amount is largely a waste. It then follows that to be most economically and well fed we must have food containing the required amount of carbon, nitrates and phosphates, and when the proper proportion in these supplies is not observed there is waste of both food and energy. Life has its limitations in every line of activity and we have to choose which we will follow or be blindly tossed on the waves of accident; and if vital energy is uselessly expended there will be that much less force to expend along the lines of worthy activity.

Sound minds cannot emanate from unsound bodies; they will be more or less warped by the aggravations of the flesh and manhood will fall below its high estate. This question of food and its waste thus becomes one of moment to the State; and political and moral philosophy may well make it a study, for not only the material but the moral advancement of our country depends largely upon its wise and practical solution." When the American woman learns to apply chemistry and physics to every-day life many of "The briars in this working-day world" will disappear; for she will then waste neither time nor material in preparing what is not needed.

We select our food largely from habit and not from thoughtful consideration. We have always been accustomed to fine wheat bread upon our tables and it seems a necessity, yet in that form bread is only a broken reed to lean upon. The flour has lost nearly ninety-five per cent of its nutritive properties in the process of grinding and bolting; but make bread of the unbolted wheat flour and it becomes the staff it is said to be; for it then contains all the elements for sustaining life. Mr. Bellows says that it takes fifteen barrels of fine wheat flour to afford as many of the elements required to sustain life as are afforded by one barrel of unbolted wheat flour. Consider, for a moment, the waste in this one item of our daily living! To supply this lack in our bread we must eat other things, selected with the same disregard to their properties, and again there is great waste, often from thoughtlessness but oftener from ignorance of the principles of nutrition and economy.

There is space here to mention only a few articles in which the common diet of the people might be economically improved, and we need not depend entirely upon theoretical principles; for practice has shown the value of many articles and science only shows us the why and broadens our understanding of their uses. Throughout the southern states, corn-meal is a staple of diet the use of which was an economic consideration with the planters; for it was soon discovered that "hoe-cake" and "dodgers" would satisfy the cravings of hunger for a longer time than any other form of bread. Dried peas and beans are nutritive but lacking in carbon, so we rationally prepare them with pork and have a palatable dish. Vegetable soups with a little meat stock are nutritious and cheap, but are not so much used in this country as in

some others, probably for the reason that economy of food has never been so much a necessity in this land of bountifulness. The question, however, is being more and more studied, for no other branch so closely affects the common people as this one of economy of food.

Food cannot be selected entirely by chemical analysis; we must profit by experience, as well as by progressive investigation; for what is meat for one under some conditions is poison to another under different conditions, and we are not to eat unsavory food just because it may contain certain required ratios of nitrates, phosphates, etc. Our food should be not only nutritious but palatable and agreeable to the senses. Let our tables present the most æsthetic appearance consistent with our condition. There is economy in this, for eating made agreeable and performed in a refined manner is less voracious. Yet what is palatable depends much upon education, and our children should be trained in the use of wholesome foods with simple and not highly seasoned sauces.

As soon as careful thought is given the subject, it becomes a simple matter to supply a family with the most nutritious and appetizing food with one-half the outlay usually made. When this saving is considered in the aggregate it is astounding.

We may trust the women of our country to adopt any economical measure that can be shown to be needful for the better and higher advancement of the race; and where can she so quickly and surely affect a change as in this, her own particular domain?

If countries have declined and lost their power among nations from extravagant indulgencies, why may not a country rise to the highest pinnacle of strength and influence by the frugal use of such nutrients as give the greatest activity and highest expression of vital energy?

INA E. HOLROYD.

The late unpleasantness with Spain, the Philippines and China has turned the wheel of fortune the right way for several of our College men. Lieut. Ralph Harrison, formerly professor of military science (1897-98) in this institution, is now a captain in the regular army, and Assistant James G. Harbord ('86), of the Mathematical Department, is now the commanding officer of the U. S. army of the district of San Jago, Cuba. Of the promotions of others we have frequently made mention in the INDUSTRIALIST.

NEED FOR HUMUS IN SOILS OF WESTERN KANSAS.

MR. J. C. WILKIN, of Bow Creek, Phillips county, Kan., writes as follows: "We are feeding corn fodder, hauling to the corral, and it is accumulating so as to be inconvenient. There has been no rain on it and the stalks are very dry. The cattle do not eat the stalks to any extent. There is a little manure mixed with the stalks. We wish to haul them from the corral. My brother thinks it is not advisable to haul the stalks upon the plowed field; thinks they are of no value as manure, and it will be a positive detriment to place them upon the plowland. But I think we should haul the stalks, manure and all, upon the field we will plant to corn in the spring, spreading it thinly upon the ground. I contend that the stalks rotting in the ground will act as a mulch and keep the soil from blowing so badly. Will you briefly reply as to which course you think best to follow."

The above letter opens a question of vital importance to the western Kansas farmer. Let us take up first the question of the amount of fertility in corn-stalks. One ton of corn-stover contains fertilizing materials worth \$5.34, figured at retail prices of commercial fertilizers, and a ton of corn-stalks would contain very little less than this amount. This of itself would be well worth the time spent in saving it to the farm. But in addition to the actual fertility added, decaying corn-stalks, manure, or any vegetable matter thoroughly incorporated with the soil, prevents the soil from blowing and also assists in forming a reservoir to hold moisture. Such decaying matter constitutes what is termed the *humus* of the soil. A soil deprived of its humus puddles easily, even during a heavy rain-storm, and this causes the water that should penetrate the soil to accumulate on the surface and flow away to the ditches and ravines. As soon as the rain is over and the hot sun comes out, the soil bakes hard and capillary attraction soon exhausts it of the little water that found its way into it.

Last summer the writer traveled more than thirty miles by wagon through Pawnee and Ford counties just after these counties had been visited with heavy rains, and every foot of the soil traveled over showed great need for humus. To say that three-fourths of the water that fell upon these soils during those rains was lost to them in less than one week after the rains fell would not be putting the case any too strongly. The water-holding capacity of the soils in this locality, and in fact a large portion of western

Kansas, can be greatly increased by the addition of humus, and if the farmers would act upon this proposition for a period of ten years the great losses from drought that they now experience would be largely reduced, especially if they apply the principle of a dry-dust mulch in their cultivation. Western farmers should adopt the method of feeding straw and corn-stalks to stock and hauling the manure back upon the farm. If injurious effects result it is the fault of the method of application and not of the manure.

The writer well remembers his first experience in hauling out manure. The manure was obtained from a straw stack that had been eaten down by cattle. It was hauled out upon wheat stubble in July, and the land was given a heavy coating. After the manure had thoroughly dried out it was plowed under and the land sown to wheat. The fall was rather dry and the following spring was also dry, and the result was a total failure of the crop of wheat upon the manured land. The reason is obvious, and it is needless to say that the writer does not recommend this manner of applying manure. However, the next year the manure was thoroughly incorporated with the soil, and although the application was made fifteen years ago the manured land has produced very much better crops every year since the first one than the same kind of land adjoining it which was not manured.

The end sought in applying manure should be to get it incorporated with the soil in a decaying condition as quickly as possible. Whatever method does this the best is the one to use. For western Kansas, manure applied in the winter as a top dressing to wheat, if the coating is not too thick, gives good results. Even dry straw has been known to give good results when applied in this manner. A top dressing of manure upon alfalfa is an excellent manner of applying it. If manure is plowed under it should be done while it is wet and the ground in good, moist condition. A thorough disking after plowing will add to the good results. In general, it is better in the western part of the State to apply well-rotted manure whenever possible. In cases like the one reported in the letter quoted above it would be much better to haul out the dry corn-stalks than to burn them or otherwise waste the fertility they contain and deprive the soil of the humus they would add. If they are hauled out upon land to be planted to corn, as he suggests, they should be cut up with a stalk cutter or, better, a well-sharpened disk harrow or "tornado."

Aside from the nitrogen that may be added to the soil by means of the bacteria that grow upon the roots of leguminous plants, and a small amount brought down by rains, humus constitutes the sole source of nitrogen in the soil. Any system of farming, therefore, which rapidly exhausts humus from the soil will soon exhaust it of its nitrogen, the most expensive element of soil fertility and plant food. Continuous wheat farming does this. Let me quote from Professor Henry upon this subject. He says: "The great Northwest is now largely devoted to wheat growing. Here the farmers are gathering into the wheat grains the fertility which has been accumulating for ages. Prudent farmers and stockmen further east, knowing of the fertilizing ingredients in the by-products of the flouring mills, are making large use of them and by carefully saving the droppings from their cattle and applying them to the land are transferring the great fertility of the Northwest to other districts. In this depletion of the soil of the Northwest by almost exclusive wheat growing, and in transferring the fertility taken up by this crop to other regions in the by-products of milling, we are experiencing one of the greatest economic changes ever witnessed in American agriculture."

But the western Kansas farmer is using even more improvident methods than those ascribed by Professor Henry to the farmer of the Northwest. He not only ships his fertility away from his farm in the wheat that he sends out, but he is burning all of his straw and is thereby setting free into the air three dollars worth of nitrogen for every ton of straw that he burns. Such methods cannot be followed with success for any great length of time, and unless better methods are speedily adopted the next generation of farmers will reap a whirlwind of destruction from the improvidence of the present generation.

In conclusion, the writer will say that he has "preached" the principles laid down in this article at more than a dozen farmers' institutes in southwestern Kansas, and at every place he found men who have been following these methods, and in every case they were abundantly successful. One man near Hazleton reported that by persistent application of manure for a few years he had reclaimed two acres of hard-pan which would not at first produce even buffalo-grass, and had made it produce sixty bushels of corn per acre. What these men have done all can do, and the time to begin is *now*.

R. W. CLOTHIER.

THE INDUSTRIALIST.

BOARD OF REGENTS.

*Published weekly during the College year by the
Printing Department of the*

KANSAS STATE AGRICULTURAL COLLEGE.

Manhattan, Kansas.

☆ ☆ ☆

PRES. E. R. NICHOLS.....Editor-in-Chief

PROF. J. D. WALTERS.....Local Editor

PROF. J. T. WILLARD.....Alumni Editor

HON. E. T. FAIRCHILD, President....Ellsworth

HON. J. S. MCDOWELL, Vice-President,
Smith Center

HON. W. T. YOE, Treasurer.....Independence

HON. WM. HUNTER, Loan Comm'r, Blue Rapids

HON. MRS. SUSAN J. ST. JOHN.....Olathe

HON. CARL VROOMAN.....Parsons

HON. J. M. SATTERTHWAITE.....Douglass

PRES. E. R. NICHOLS, Sec. *ex-officio*.

LOCAL NOTES.

Manhattan enjoys rumors about the speedy erection of a new opera-house.

J. A. Conover, '88, and a graduate of our dairy school, reports the purchase of five cows that gave a ton of butter a year.

Representative J. B. Sweet, of Coffey county, came up from Topeka to spend Sunday with his daughter in College here.

Miss Alice Melton, assistant in the office of the director of the Experiment Station, has been sick for nearly two weeks, with quincy.

Third-year Student G. W. Skow left for his home near Leonardville, on February 15, feeling too ill to continue his studies in the engineering course.

W. H. Putman, a student in the dairy school, has accepted a position in a creamery at Merkel, Texas. Other states appreciate our work as well as Kansas.

The Experiment Station has received a lot of seventy-five pounds of Utah-grown alfalfa seed and fifty pounds of Japanese barn-yard grass seed which will be grown on the College farm next season.

Engineer C. W. McClure, of Emporia, was in the city last week and held several meetings under the auspices of the Y. M. C. A. He is a very effective talker and a valuable worker for temperance and righteous principles.

The fifth congressional district is entitled to a cadet in the Naval Academy at Annapolis and Congressman Calderhead will make the appointment. An examination will probably be held to determine upon the deserving young man.

At a meeting of the athletic association last week Fred Fockele was chosen manager and E. W. Coldren captain of the baseball team for the coming season. The boys think they have some material of unusual ability this season.

Miss Eva Marshall Shontz, national president of the Young Peoples' Christian Temperance Union, lectured in the College chapel Friday evening on "Mrs. Nation and Her Hatchet," under the auspices of the College Y. W. and Y. M. C. A.

Miss Hattie Nichols, who went home to Liberal on account of the serious illness of her brother, has returned and is again at her work teaching algebra. She has four classes daily.

The seniors received the juniors last Thursday night in Domestic Science Hall. Music, target shooting, conundrums and light refreshments formed the main part of the program.

W. J. Stewart, Arkansas City, Kan., reports to the Farm Department that he harvested one hundred twenty-four bushels of soy beans from four acres—thirty-one bushels per acre.

The next meeting of the Manhattan Horticultural Society will be held in Horticultural Hall, February 21, at the usual time in the afternoon. Assistants Haney, Baxter and Dickens will furnish the "pabulum." There will also be a question box. Everybody is cordially invited.

Miss Stoner, assisted by the Military Department, will receive the first- and second-year classes at H. P. Dewey's Park Place parlors, February 22, 1901, from 7:30 to 10:30 P. M., and the third- and fourth-year classes at Park Place parlors, February 23, from 7:30 to 10:30 P. M.

In one day last week the Farm Department received five applications for competent men to manage skimming stations. One hundred sixteen students are now taking dairy work and the prospects are that every competent man will have a place offered him before the close of the school. No other College work is so satisfactory in immediate returns as that offered by the dairy school.

Friends of Mr. Robt. J. Brock, '91, are circulating a petition asking Governor Stanley to appoint him as a Regent of the College. They argue that every educational institution should have a home Regent. Mr. Brock is a graduate of the College, a rising young lawyer, and the county attorney of Riley county. His appointment would give general satisfaction in College circles and in Manhattan.

Steele Bros., Belvoir, Kan., offered to donate any animal in their large Hereford herd to the College. Perfection Maid 116691 was selected, and as she was entered in the Hereford sale at Kansas City it was necessary to bid her in at the sale. Mr. Haney represented the College at the sale and was obliged to bid \$500 to get the heifer, as many breeders wanted her on account of her unusual high quality and breeding.

The resolution to accept the Fort Hays reservation from the United States government for the purpose of establishing thereon an experiment station and a filial of the State Normal School has passed both branches of the State legislature and received the signature of the governor. The question now is: What will the State do with the grant? The work of fencing and improving the land should commence this spring.

A telegram received February 15 announces the sudden death from appendicitis, of Student Harry A. Rowland, of Broughton, Kan. The deceased enrolled as a first-year student last fall term and returned in January from his New Year's vacation apparently in good health. A few days ago he left classes and returned home, complaining of sickness.

The society lecture course committee has had such good success in the sale of tickets that it has been made possible for them to supply an extra number without extra charge for seats. The Fisk Jubilee Singers have been engaged for March 13. This club is well known and will draw a large audience. The last INDUSTRIALIST stated that there was but one more number, but this is a mistake as there are three more numbers yet to come. The other numbers are: Rev. James McClary, March 15, and John Townsend Throwbridge, March 18. Both are reported to be excellent. The committee regret that these last three numbers come so close together, but there was no alternative with regard to dates. Tickets for these three remaining numbers may be obtained of Student H. T. York, president of the lecture course, at \$1.00 or 75 cents. Single tickets as usual at 45 or 35 cents. The lecture course committee have spent about \$800 in their effort to provide good entertainments this year and they deserve to be appreciated.

Architect L. P. Brous. '86, formerly assistant in the Department of Industrial Art, writes from Torreon, Mexico, that he is doing well. He is at present building a large cold-storage plant for La Internationale Compania Exportadora de Carnes. If we had the space we should like to quote the whole long letter. Of the Mexican people he speaks as follows: "The natives work for fifty cents per day, in silver. This is equivalent to twenty-four to twenty-five cents American money. The average laborer here has a pair of rawhide sandals, breeches of breech cloth, shirt and blanket. He also has a hat or sombrero—this latter is his pride. It may cost twenty-five dollars, while the rest of his clothing would not bring thirty cents. His blanket is his overcoat, bed, and house, according to the time of day and year. And the women—the senoritas—well, that which you hear is principally a myth. There are few, very few, fair-looking young women among the higher classes of Mexicans. They lack intelligence. The better class of Mexicans are very polite people even to the extent of annoyance. They regard us as rude in manner, but feel us their superiors in being able to *do* and *know*. They never hurry and can not realize the nerve straining they cause by their habit of waiting until to-morrow, '*hasta manana*.'"

The following notes concerning the effective assistance by the Music Department of the College in a patriotic program are excerpted from the last number of the *Western Veteran*: "The presentation of medals to the Twentieth Kansas boys, under the auspices of Lew Gove Corps, No. 43, of Manhattan, was in all respects the most elaborate, the best planned and most successful of any presentation up to this date, and should place the ladies of

Corps 43 in the highest estimation with the citizens of Manhattan and the comrades of the Grand Army whom they represented in the presentation. Every number on the program was rendered, with several added features. Comrade A. B. Brown, professor of music at the Kansas State Agricultural College, had charge of the musical program; he read the poem, "A Song of Triumph," written by Mrs. Laura E. Newell; he also composed the music for the original "Presentation Song" which was written for the occasion by Mrs. Laura E. Newell and is dedicated to the gallant Twentieth. The baton used on this occasion was a present to the professor from Lieut. Philip Fox, of the Twentieth. It was made from the mast of the *Reina Cristina*, the flag ship of the Spanish fleet destroyed by Dewey in Manila bay. Professor Metcalf and wife, of the College, had the entire charge of the tableaux, which were appropriate and successfully presented."

Editor Fockele, of the *LeRoy Reporter*, tells of his visit at the Agricultural College, where his two sons are studying, in the following happy strain: "Glick was at the depot to meet us, but Fred was at the College finishing his work for the day. The evening was spent in a pleasant family reunion. Next morning before day, all rolled out of bed, dressed quickly and proceeded in brisk step to the large dining table of the Coöperative Association, or 'Crow Hop,' as the boys facetiously call it. The breakfast scene is a sight for a dyspeptic. One hundred fifty stout, hearty boys with youthful appetites, sharpened by a quick walk through the brisk morning air, lost no time in seating themselves at long tables. Great trays of biscuits, light bread, big dishes filled with meat, butter and other accessories, pitchers of milk and bowls of sugar, were piled on the table, and their contents disappeared from sight as if by magic. There are no dainties, but the 'grub' is rich in protein, and the boys' cheeks and clear eyes show it. After breakfast a short walk brought us to the College. It was not long until a bugle sound brought Companies C and D to the Armory for a drill in the manual of arms. Companies A and B were attending a class in tactics. Chapel exercises came next. The chapel is altogether too small. It was crowded and yet many students could not find seats. The writer visited the shops, dairy building, a fine new structure, and other interesting sights, shook hands with a number of professors and students with whom it has been his pleasure to become acquainted, and after a square dinner with the 'Coöps.' he turned his face toward home. The people of Kansas, and particularly the farmers, are gradually awakening to the fact that at Manhattan they have one of the best schools in the world. As an Agricultural College it is standing at the head in the nation. This year the attendance is over 1200. It will be 2000 before long. More buildings and more teachers are badly needed. If the present legislature does not make ample appropriations for the College, its work will be materially hampered during the next two years. We are glad to note that Coffey county legislators are 'all right' on this line. Representative Dooley is also an enthusiastic friend of the College."

House Bill No. 154, by Mr. Cave.

AN ACT to provide for the destruction of prairie-dogs and gophers, for making experiments with that in view, and making an appropriation therefor.

Be it enacted by the Legislature of the State of Kansas:

SECTION 1. The township auditing board of any township in this State, at any regular or special meeting, is hereby authorized to employ one or more suitable persons to destroy prairie-dogs and gophers within the limits of such township, compensation for such services to be paid out of the general fund of such township; but no township shall expend for such purpose more than one hundred dollars in any one year, nor shall such compensation to any one person exceed one dollar and a half for each day of actual work performed: *Provided*, that no such employment shall be made until a petition signed by a majority of the legal electors of such township shall be presented to such board asking that such action be taken.

SEC. 2. The Board of Regents of the Kansas State Agricultural College is hereby authorized and directed to select some competent person to direct and conduct experiments for the purpose of determining the most effective and economical method of destroying prairie-dogs and gophers.

SEC. 3. The person so selected by said Board of Regents shall have authority to visit the various counties of the State that are infested with prairie-dogs and gophers and, either by himself or through such persons as may be selected under the provisions of section one of this act, make such experiments as he may deem advisable for the purpose of destroying prairie-dogs and gophers. He shall receive such reasonable compensation for his services as may be determined by said Board of Regents and actual traveling expenses.

SEC. 4. For the purpose of making such experiments, the person so selected by said Board of Regents shall have authority to purchase any necessary material, prepare the same in a suitable manner, and furnish it to any persons employed by the township auditing boards as hereinbefore provided. And such persons so selected by said Board of Regents is further authorized and directed to procure and furnish to each person so employed by township auditing boards such prepared material as he may by experiment determine to be most effective and economical, in such quantities as he may consider reasonably adapted to the purpose of ridding such township of prairie-dogs and gophers.

SEC. 5. The sum of five thousand dollars, or so much thereof as may be necessary, is hereby appropriated out of any money in the State treasury not otherwise appropriated, for the purpose of carrying out the provisions of this act.

SEC. 6. The auditor of state is hereby authorized to draw his warrants upon the treasurer of state for the purposes herein set forth, upon verified vouchers approved by the Board of Regents of the Kansas State Agricultural College.

SEC. 7. This act shall take effect and be in force from and after its publication in the official State paper.

JOHNSON GRASS.

(Press Bulletin No. 78, issued by Botanical Department.)

This grass is a native of the Mediterranean region. It was introduced into the Southern States about 1830, and for some time was known by the name of Mean's Grass, which name it still retains in some localities. About ten years later it was introduced into Alabama from South Carolina by William Johnson, and has since been quite generally known as Johnson Grass. Its botanical name is *Andropogon Halapensis*, or *Sorghum Halapense*. It is sometimes called Guinea Grass, but this name properly belongs to *Panicum maximum*, a tropical forage grass sometimes cultivated in southern Florida.

Johnson Grass has received considerable attention in Kansas lately. It has been grown in the plats of the Kansas Experiment Station for several seasons, and its behavior in our climate tested. It is a rank growing perennial, with numerous strong rather fleshy creeping rootstocks, by which it propagates. The stems and leaves are coarse but quite succulent. It seeds abundantly and seed can be purchased at all seed houses. If the seed is clean, about one bushel per acre is sufficient for sowing. Johnson Grass is chiefly used for hay, for which purpose it should be cut early before the stems become too old and hard. Usually two or three cuttings can be made. The seed should not be sown until the ground is warm or it will not germinate well. Johnson Grass prefers rich moist soil, though it will grow in quite a variety of soils. It is injured by severe winters, but the cold winter of 1898-99 did not entirely kill out the experimental plot, and it quickly recovered from the effects of the cold. It is not a success as a pasture grass, as it is injured by grazing to such an extent that a pasture soon becomes useless, yet the vitality of the rootstocks is such that it is never entirely killed out in this way, and after a rest soon recovers from the effects.

Throughout the South, under proper conditions it is considered an excellent hay grass, and in all parts of Kansas where there is sufficient moisture it will undoubtedly be valuable for the same purpose.

However, it is exceedingly difficult to eradicate the grass on land where it has obtained a foothold, and for this reason it may become a pestiferous weed. Hogs are rather fond of the rootstocks and when confined upon a plot of the grass will destroy it. But on soil adapted to its growth it requires great care to eradicate it. If one wishes to grow Johnson Grass the best plan is to devote a field to the purpose without expecting to subsequently put the field in cultivation. With care it can be confined to this field. After a few years the ground becomes so full of rootstocks that the development is hindered. To rejuvenate a field, it should be plowed and harrowed in the spring, or else thoroughly disked.

All these points should be carefully considered before the grass is given a trial. As a forage grass it may prove of great value, and the fact that it is difficult to eradicate may be in its favor in those parts of Kansas where it is not easy to grow forage plants successfully. But if tried, great care should be taken to keep it under control.

A. S. HITCHCOCK.

NOTES ON PLUMS.

(Press Bulletin No. 80, by Horticultural and Entomological Department.)

The conclusion drawn by the Kansas Experiment Station from their observations on the Japanese plum is that they rank with the peach in hardness. They head the list for table and market qualities. Their habit of early blooming makes the crop uncertain. Burbank is, perhaps, hardier than Abundance, and they are nearly equal in quality. Ogon is hardier than either, but not nearly so good in quality of fruit.

Of European plums, *Communia*, Early Red, and one called 19 Orel are at the head of the class, but all European varieties have been uncertain bearers. The fruit is of good quality for use fresh and for canning.

The most promising varieties for general planting are those which have been developed from our wild fruits. All varieties of the species *Americana* have proved hardy. While they retain in varying degree the astringency of the wild plum, most of the varieties produce desirable fruit for canning,

marmalade, and jelly. Quaker, Wolf, Weaver and Wyant have the best record for regular bearing and general good qualities.

The varieties of the species *angustifolia*, commonly called Chickasaw plums, have been somewhat injured by extreme cold. Robinson has proved most nearly hardy, and a regular and heavy bearer, producing fruit of good quality.

Most of the class known as *hortulana* have proved fairly hardy. Golden Beauty and Moreman have been the heaviest and most regular bearers. Moreman is a rather small, red plum, red flesh, small pit, and especially fine for jelly. Golden beauty is a medium-sized, yellow plum, of fine flavor when fully ripe, and a favorite for marmalade. Wayland. Wild Goose and Clinton are larger plums, of good quality, and fairly regular in bearing.

Eighteen or twenty feet is recommended as a good distance for planting. Clean culture is an important factor in fighting curculio and fungi. Mixed planting increases the chances for pollination. A full discussion of varieties and culture is given in Bulletin No. 100, soon to be issued, and which, like the other bulletins, may be had by application to the Agricultural Experiment Station, Manhattan, Kansas.

A. DICKENS.

DISCING ALFALFA.

(Press Bulletin No. 82, issued by Farm Department.)

Our first experience in discing alfalfa was in 1898. A field had been seeded to alfalfa in the dry year of 1894 and a poor stand secured. In 1897 this alfalfa was heavily pastured by hogs. The hogs were taken off early in the fall and a heavy growth of crab grass came up. The crab grass was so thick and the stand of alfalfa so thin that it was not worth keeping.

Late in March, 1898, this field was harrowed with a disc harrow, the discs sharp and set at as great an angle as possible. It was immediately cross disced with the discs set the same way. The ground was thoroughly pulverized and the alfalfa apparently destroyed. It soon started, branched out thickly, and we made three good cuttings from that field that summer.

In 1900 we went a step further in discing alfalfa. The season was very dry at Manhattan, the rainfall in June being 1.19 inches, in July 4.51 inches, and in August 2.84 inches. Two fields of alfalfa, two years old, were disced.

One field was disced March 28, the first cutting for hay made May 31, disced June 6, the second cutting for hay made June 25, disced June 27, the third cutting of alfalfa made August 13, and the alfalfa disced for the fourth time August 20. The last cutting of alfalfa was made September 13. This shows four discings and four cuttings of alfalfa on upland in a dry year.

Another field of alfalfa was disced and cross disced March 27. The first cutting of alfalfa was made June 4 and the second discing June 6. Through July and the early part of August, the alfalfa was cut from day to day and fed green to dairy cows to help out dried up pastures. August 20, the field was disced, and October 3, the last cutting of alfalfa made.

The alfalfa in both fields made fine late fall growth and went into the winter in good condition.

The stand of alfalfa on both fields disced in 1900 was good. A harrow with sharp 16-inch discs was used, the discs being set at a slight angle, just sufficient to turn the soil over, and the harrow was weighted to make the discs split the alfalfa crowns to a depth of two inches. The discing split the alfalfa roots and this made them throw out many new shoots. The discing made an earth mulch over the field and prevented the evaporation of water so rapid in a dry time from an alfalfa field just after being cut. The discs were set so that they barely turned the soil over and, running at a depth of two inches, they turned the roots of the crab grass and weeds up to the sun which killed them. These disced fields were clean and free from crab grass in the fall.

We have not disced one year old alfalfa. From these experiments, we feel safe in recommending discing all alfalfa of two years or more standing. Make the first discing early in the spring and then disc immediately after each cutting. If the stand of alfalfa is fair to good, set the discs as we did in the experiments made in 1900. If the stand is poor and the growth of crab grass thick, set the discs to cut deeply. Discing is of as much value to alfalfa as cultivation is to corn.

H. M. COTTRELL.